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ABSTRACT

This publication is one of four parts of the Project Continuing Education for Health Manpower performed by Syracuse University for the Regional Medical Programs Service. Continuing education is defined as systematic efforts to acquire, maintain, and develop the abilities, skills, knowledge, and attitudes of persons already engaged in providing health care so that they can do their jobs or fill their roles better. This part is intended to aid planners and decision-makers who are responsible for health care and health care delivery. Volume one reports on the project and includes five monographic chapters dealing with the educational process in adult learning and with large social contexts. (Volume two has five more chapters.) The chapters cover a model of continuing education as a problem-solving strategy for health manpower by Alexander N. Charters and R. J. Blakely; life-long self-directed education by Alan B. Knox; the process of planning continuing education programs for health manpower by Dorothy J. Hutchinson; the provision of inservice education for health manpower by Gary Dickinson and Coolie Verner; and the relationship of priorities and data bases to continuing education by Daniel S. Fleisher. Four key relationships are noted in the introduction which fit the chapters together. (MS)

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# Book I

## Vol. I

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CE 000 452

# Fostering the Growing Need to Learn:

## Designs for
## the Continuing Education
## of Health Manpower

## PROJECT CONTINUING EDUCATION FOR HEALTH MANPOWER

Performed by Syracuse University, Syracuse, N.Y.
Pursuant to Contract No. HSM 110-71-147 with
The Regional Medical Programs Service
The Public Health Service
The Department of Health, Education, and Welfare

Project Director: Alexander N. Charters, Professor and Area Chairman, Adult Education, Syracuse University

Principal Investigator: R.J. Blakely, Adjunct Associate Professor, Adult Education, Syracuse University

## PART ONE OF FOUR PARTS: Fostering the Growing Need to Learn

| | |
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| Part Two: | A Selected Annotated Bibliography for Continuing Educators of Health Manpower |
| Part Three: | A Report of Some Significant Activities in Continuing Education for Health Manpower in the United States |
| Part Four: | A Critique of Descriptors of Terms in Continuing Education for Health Manpower |

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July 1973

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# STATEMENT

This publication is one of four parts of the Project Continuing Education for Health Manpower performed by Syracuse University pursuant to Contract No. HSM 110-71-147 with the Public Health Service, Department of Health, Education, and Welfare. The four parts are *Fostering the Growing Need to Learn: Designs for the Continuing Education of Health Manpower; A Selective Annotated Bibliography for Continuing Educators of Health Manpower; A Report of Some Significant Activities in Continuing Education for Health Manpower in the United States;* and *A Critique of Descriptors of Terms in Continuing Education for Health Manpower.* We take responsibility for these products, with full acknowledgement of the contributions of many persons to whatever usefulness the results may have to continuing educators in the health manpower field.

The Project staff acknowledges, first, the contributions of Dr. Marian E. Leach, Head, Education Science Section, Continuing Education and Training Branch, RMPS. She and the Project Director had many hours of discussion of the needs of the field of continuing education for health manpower before an enterprise to try to meet some of them took shape. During these discussions it was decided that at various stages of the study, the Project staff and the RMPS staff and advisors they would appoint would meet face-to-face to review not only the substance but also the next steps. In the Foreword to this volume, Dr. Edward Hinman remarks that the contract was unique in that it "incorporated provision for process as well as product." In that process, Dr. Leach participated as Project Officer and she also contributed as a highly professional and widely experienced continuing educator to every product at every stage.

In her preface Dr. Leach acknowledges the contributions of the *Ad Hoc* Group that advised the RMPS on the monographs that make up *The Growing Need to Learn.* The Project staff acknowledges its grateful indebtedness also to the persons who advised Syracuse University. At first we called the group an "advisory panel." There were three plenary sessions. But as the Project developed the help we sought and received became more flexible. There were many informal meetings with individual members and with others who were not at first formally on the "panel."

We acknowledge the special contributions to the entire project of the following persons:

Pauline Atherton, Professor, School of Library Science, Syracuse University

Robert D. Bergeron, Director of Education, The Connecticut Hospital Association

Cyril O. Houle, Professor, Adult Education, University of Chicago

Ernest McMahon, Dean Emeritus, University Extension, Rutgers University

Rolf Monge, Associate Professor, Psychology, Syracuse University

Margaret Sovie, Educational Director, Upstate Medical Center, State University of New York

Coolie Verner, Professor and Department Chairman, Adult Education, University of British Columbia

At various times the staff and panel were assisted by the following persons:

Harlan Copeland, Associate Professor, Adult Education, Syracuse University

Doris Chertow, Editor of Publications in Continuing Education, Syracuse University

Stanley Grabowski, Director, ERIC Clearinghouse on Adult Education

Betty Jane Vaughn, Director, Library of Continuing Education, Syracuse University

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# FOREWORD

By Edward J. Hinman, M.D., M.P.H.
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The premise on which the Regional Medical Programs (RMP) is based is that the providers of health care in the private sector, given the opportunities, have both the innate capacity and the will to provide quality care to all Americans. Accepting this assumption, the issue has become one of how best to develop and promote these opportunities.

The early RMP efforts in continuing education revolved around the classic approach – that is, programs designed by those whose primary role was to provide the basic training and education of health practitioners. The rationale for the selection of particular educational objectives was predominantly that which the academician saw as of high priority. Very seldom were the objectives related to defined deficiencies in the performance of services, either from a "performance" standpoint or from a quality-of-care standpoint. Nor were they related to deficiencies in the health-care delivery system in that particular geographic or demographic area. By the same token, Regional Medical Programs first supported specific health-care delivery projects which were fragmented and frequently not related to well documented need.

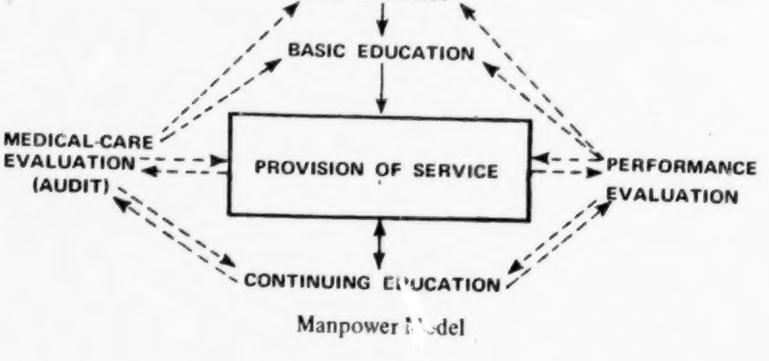
During 1970, a major shift in the Regional Medical Programs philosophy from project support to program support began. This occurred for two reasons: The first was a growing realization of the importance of local decision-making in determining program priorities. The second was an effort to streamline the grant-review process. For the past three years the local Regional Medical Programs have been charged with the responsibility for assessing the health needs of the community either from reports furnished by the Comprehensive Health Planning Agencies or from studies of their own. Multidisciplinary, broadly based Regional Advisory Groups have been responsible for then designing a program to respond to priorities among health needs of the community; projects were solicited to fulfill the objectives of this program.

The basic role of the local Regional Medical Program has been that of a "catalyst": to bring people together to make decisions and then to implement programs with the expectation that through provision of a small amount of "start-up money" improvements could and would occur.

During the change from project support to program support, the RMP philosophy in manpower development and utilization was evolving. It became obvious that it was absolutely necessary to begin to relate manpower-development program objectives to demonstrated needs in the health-care delivery system for that particular area. Ideally, priorities must be established locally and a "system" designed to respond to those needs. The system usually will be pluralistic and not under a single management scheme. Within that system there are certain services which must be provided in order for it to function, there are certain tasks that must be performed and there are judgments that must be made relating to these tasks. Once these tasks and judgments are identified, they can be allocated to different occupational categories. Analysis of the assigned tasks and judgments relegated to the different occupations dictates the training required to prepare individuals to function and accomplish the objectives of care.

Once the health professional has completed his training and entered the job field, regular periodic evaluation of his performance is critical, both from a standpoint of how well he is performing what he has been taught to do, and from the standpoint of whether the service was appropriate for the person for whom it was provided. From this assessment, educational objectives can be established and continuing education programs designed to assist the individual to carry out his responsibilities effectively. This continual recycling of training, provision of services and evaluation must persist throughout the career of the individual.

The following diagram depicts a model showing the interaction of the development of health manpower (from recruitment through basic education to continuing education) and the utilization of health manpower, using various means of assessment, or evaluation, to assure high standards at every level and step – all to the end of providing high-quality health service to the people.



Manpower Model

There are four kinds of education that would fit within this framework for continuing education depicted above. The first is changes in attitudes; the second is retraining – that is, the substituting of new concepts; the third is the introduction of new knowledge; and the fourth is the mastery of specific skills and techniques. The chapters that follow in this volume deal in depth with these ideas.

It became obvious to RMPS that there was a paucity of information about many key points in the education-of-health-professionals model depicted in the figure above. Because of this and because of the demonstrated excellence of continuing education at Syracuse University, a contract was established to contribute to the enrichment of the literature of continuing education for health manpower.

This contract was unique in that it incorporated provision for process as well as product. It was designed to be highly interactive. The Project Officer, Dr. Marian Leach, and the Principal Investigator, Mr. Robert Blakely, worked to develop the specific content of each of the publications through cooperative process utilizing an *ad hoc* group of consultants that the Regional Medical Programs Service called together and a panel of adult education consultants to Syracuse University under the leadership of Dr. Alexander Charters, Project Director. From these discussions the topics and the authors for the following monographs were nominated. After each of the authors was contacted and agreement to write the specific monograph was reached, discussions were held with staff and authors concerning the overall needs in the field as perceived by RMPS and by Syracuse University. The result is a highly provocative series of monographs, which are brought together as chapters in the present volume.

Several major issues run through the chapters but are not explicitly settled; they are of key importance to all planners of health manpower programs. The first is, what is the meaning of continuing education for the professional himself? Is it merely to perform tasks and thus to serve public accountability, or is it to serve and improve society by self-education? The second area of key concern is an identification of who decides when continuing education is needed and what is to be served by it? Another area requiring more intensive work is the necessity for a restructuring of the entire approach to job descriptions. Instead of identifying broad areas of duties, these descriptions should establish performance standards or requirements that can lead to intelligent evaluation of performance by the employee and the supervisor; deficits can then be clearly identified for the continuing education process.

As we review the history of education of health professionals, it becomes apparent that Regional Medical Programs represents a phase in the developing relationship of education and quality-of-care assessment. The authors of these chapters describe key elements of this relationship.

March 1973

# PREFACE

In this volume, which makes up one of the published documents – products of the contract between Syracuse University and the Regional Medical Programs Service – are the names of the distinguished authors of the chapters. This prefatory statement provides the opportunity to identify some of the many other persons whose expertise in their fields and whose firm grasp of issues of significance to continuing education for health manpower – led to the decisions as to what should compose its chapters and by whom they should be written. It has been a privilege to be associated with each contributor to the entire endeavor.

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# INTRODUCTION

This volume is intended to aid decision-makers in the continuing education of health manpower. Continuing education, which includes training, is defined pragmatically as systematic efforts to acquire, maintain and develop the abilities, skills, knowledge and attitudes of persons already engaged in providing health care so they can do their jobs or fill their roles better. The field of health manpower is vast and varied – ranging from the specialist physician to the previously untrained employee, from the lay board member to the volunteer aide. The situations in which health care is provided are many and varied – ranging from the hospital and clinic to the physician's office and the patient's home.

Many persons in many positions and roles make decisions about continuing education of health manpower. Some of them are the planners, policy-makers and managers who make decisions about health care and health-care delivery, for whom continuing education is, or could be, a major strategy for improvement. Others are the actual providers of health care, for whom continuing education is, or could be, a major means for better performance. Still others are persons who have direct responsibilities for planning, implementing and evaluating the actual continuing education activities. Most of all these several kinds of persons lack professional preparation in education; many who have had such professional preparation lack assurance that it fits them for their responsibilities. Almost all these persons in all these positions or roles lack a rationale that links continuing education and training efforts to efforts to improve health care and health-care delivery. This volume is intended to help remedy these lacks. It was designed and written for the people "on the firing line," not primarily for scholars.

This introduction (1) reports on the project of which the present volume is one result, (2) sketches the overall plan of the volume, (3) gives an essential description of each of the ten chapters, and (4) indicates some key relationships among several of the chapters.

## The Project

The purpose of the Project was to make a critical study of continuing education activities in the field of health manpower in the United States in order (1) to describe a scientific basis and a conceptual framework for continuing education efforts, and (2) to document continuing education of health manpower in a systematic way that would help decision-makers avoid traditional pitfalls, encourage sound innovations, and replicate and advance successful efforts.

The Project was to result in a set of five instruments: (1) a model, or models, applicable to a wide range of practitioners representing various disciplines and responsibilities in the provision and delivery of health care; (2) a series of monographs commissioned from outstanding authorities that together would cover all key aspects of continuing education of health manpower; (3) an annotated bibliography for continuing educators of health manpower; (4) a report of some significant activities in continuing education of health manpower throughout the country; and (5) a thesaurus of descriptors of terms (a controlled vocabulary) for the storage and retrieval of the literature of continuing education of health manpower. These five instruments were conceived as a set – all of which would serve to generate the understanding necessary for a rational, articulated, programmed development of continuing education of health manpower.

(The five instruments became four, when the model and the series of monographs were combined.)

The methods of the Project were (1) to search the literature of continuing education generally and continuing education of health manpower, specifically, especially by the Regional Medical Programs, using such resources as the National Library of Medicine (particularly its MEDLARS), the Educational Resources Information Centers (particularly the ERIC clearinghouse on Adult Education), the Syracuse University Library of Continuing Education, and the Library of the Upstate Medical Center of the State University of New York; and (2) to consult with knowledgeable individuals in various institutions, disciplines and practices, by engaging in dialogues, making visits to sites of activities and attending meetings.

The process of the Project deserves note. In the Foreword to this volume Dr. Edward Hinman, Director, Department of Professional Training and Development, Regional Medical Programs Service, writes:

> This contract was unique in that it incorporated provision for process as well as product. It was designed to be highly interactive. The Project Officer, Dr. Marian Leach, and the Principal Investigator, Mr. Robert Blakely, worked to develop the specific content of each of the publications through a cooperative process utilizing an *ad hoc* group of consultants that the Regional Medical Programs Service called together and a group of adult education consultants to Syracuse University under the leadership of Dr. Alexander Charters, Project Director. From these discussions the topics and authors for the following monographs were nominated. After each of the authors was contacted and agreement to write the specific monograph was reached, discussions were held with the staff and authors concerning the overall needs in the field as perceived by RMPS and by Syracuse University.

In his statement Dr. Alexander Charters and in her preface Dr. Marian Leach also refer to the arrangement, unusual both in its emphasis on process and in the success of the cooperation, and acknowledge indebtedness to the members of the RMPS *Ad Hoc* Advisory Group and the Syracuse University Consultant Panel.

Before we turn attention to the present volume, a report on each of the five instruments of the Project is in order.

*A Selective Annotated Bibliography for Continuing Educators of Health Manpower* is a companion volume to the present one.

*A Report of Some Significant Activities in Continuing Education for Health Manpower in the United States* has been submitted to the Regional Medical Program Service.

*A Critique of Descriptors of Terms in Continuing Education for Health Manpower* has been submitted to the Regional Medical Programs Service.

What was referred to as "The Model" has been included as the first chapter in the present volume, whose other nine chapters are what was referred to as the "series of monographs."

## The Overall Plan of This Volume

As already mentioned, the five instruments of the Project were planned as a set to "serve to generate the understanding necessary for a rational, articulated, programmed development of continuing education of health manpower." Moreover, a contractual provision was that the series of monographs "will be developed in such a way as collectively to cover all important parameters of continuing education of health manpower." The limits of number and space made "to cover all important parameters" an ideal – one that the Project staff and the staff of RMPS strove to reach. The incorporation of process as well as product into the Project, which Dr. Hinman mentions in his Forward, continued throughout the production of the monographs. A conference of six of the commissioned authors; Dr. Hinman, Dr. Leach and other members of the RMPS; and Project Director Charters and Principal Investigator Blakely was held in Chicago on July 19, 1972. A report of the conference was submitted to all nine authors. Each had in hand a skeleton of the design of the whole series and at least a description of the focus, approach and emphasis of each of the other monographs. Individual meetings, telephone calls and letters were many. There were at least two drafts and cooperative editing of each chapter.

The reader of this volume will judge how close this volume approaches the stated ideal of collectively covering "all important parameters of continuing education for health manpower." But it can be confidently asserted at least that all factors included are basic ones. Repetition of some was deliberate, for they bear repeating, and each time they are treated with a different emphasis, or some additional thoughts, examples or references.

We are ready now to comment on the chapters, first individually, and then in relationships.

## The Ten Chapters

Each chapter and the volume as a whole are intended for use primarily by practitioners, not primarily by scholars. Each of the chapters was designed and written to be a complete unit while at the same time being an integral part of a coherent book. The first seven chapters deal with the educational process; each is based solidly on accepted principles of learning, specifically adult learning. The last three chapters deal with large social contexts. The following comments are intended to give an essential description of each chapter.

1. *"The Management of Continuing Learning: A Model of Continuing Education as a Problem-Solving Strategy for Health Manpower."* The Project Model was designed to be applicable to a wide range of users representing different disciplines and responsibilities in the health-care delivery system. It is, therefore, in an analytic, or general form. It is, perhaps, not a model so much as a schema for a model – a general plan of approach within which detailed models can be constructed. To aid its application to specific situations, this chapter gives many illustrations of activities and cites other literature, including specifically the other chapters in the present volume.
2. *"Life-Long Self-Directed Education."* Supplementing the Project Model, Alan Knox presents a model of the role of "mentor" – applicable to the systematic education both of one's self and of others. He includes goals in addition to the improvement of health care and maintenance. In keeping with the more individualized needs of self-directed educators, he provides a schema that is more flexible and capacious than the Project Model in the first chapter – one of "components" rather than "steps." His illustrations are numerous and detailed. He pays particular attention to the role of the continuing educator as a "linkage-agent" between the learner and a range of educational resources and opportunities beyond those immediately around him.
3. *"The Process of Planning Continuing Education Programming."* Dorothy Hutchison describes the continuous cycle indicated in her title, step by step – from the setting of goals through evaluation of results – with many illustrations, four illuminating diagrams, and explicit attention to the application of what is known about how adults learn.
4. *"Priorities and Data Bases: Their Relationship to Continuing Education."* Daniel Fleisher expounds the use of research into performance to determine learning needs and the basing of continuing education experiences on demonstrated and quantified needs. He gives a "walk around" a model – the Bicycle Approach – designed for use by physicians in hospitals and suggests ways by which the method can be used more generally to related continuing education to improved patient care.

5. *"The Provision of Inservice Education for Health Manpower."* Gary Dickinson and Coolie Verner deal with inservice education provided by health-care institutions for their employees. They explain how systematically to achieve five kinds of continuing education: (a) orientation, (b) training, (c) development of human resources, (d) maintenance of knowledge, skills and attitudes, and (e) support (i.e., educational support to health personnel involving an educative role with patients and other staff members).

6. *"The Instructional Role of the Practitioner."* Both a physician and a professional educator, Hilliard Jason is concerned with the educative function in the prevention of disability, cure and health maintenance, and with the expanding "instructional" responsibilities of practicing health professionals. He defines the twin-relationship between the instruction of others and self-instruction.

7. *"Effective Caring: An Approach to a Rational Scheme for Financing Continuing Education of Health Manpower."* Just as Fleisher relates quality continuing education to quality health care, so does Leon Lessinger relate quality continuing education to accountability. How is continuing education of health manpower to be financed? His answer is to make a rational approach to accountability – knowing and being able to explain as precisely as possible what one plans to do with resources before they are committed, and knowing and being able to explain as precisely as possible what the outcome of the expenditure of resources has been. He is a matchmaker for a marriage of effectiveness-efficiency and compassion – a "complementarity" of accountability and humaneness.

In various ways each of the first seven chapters deals with the process and procedures of continuing education. In different ways, each of the last three chapters deals with issues that lie beneath or around the educational process.

8. *"Techniques of Functional Analysis to Determine the Requirements of Manpower and Education."* Ann Lewis tackles the problem How can educational planning to meet health manpower requirements be improved by using techniques to determine what those requirements are? She gives references points for educators in developing the training needed by any health-manpower workers. She outlines the kinds of information available and explains the tools that exist and are being fashioned for functional analysis. Finally, she suggests routes to the information needed in order to decide what knowledge and skills must be taught.

9. *"The Social Regulation of Health Manpower."* Ruth Roemer addresses herself to the question How should the mechanisms of social regulation of health manpower be changed so as to contribute to improved health-care delivery while helping to assure quality of health care? The chapter gives an overview of social regulation and describes seven kinds – accreditation, licensure, certification, and so on. Then it discusses each of the seven kinds in terms of the current picture, problems and issues, and proposed strategies for improvement.

10. *"Groping Toward a National Policy Involving Regional Efforts for Improved Health Service Delivery."* William Blockstein gives a solidly documented account of the stirrings by the American people through their governments toward a national policy of enabling all citizens to have access to the highest possible quality of health care at the lowest possible cost – turning toward that ideal through strengthening the ways of pluralism and voluntarism. He dwells specifically on the Regional Medical Programs, the Comprehensive Health Planning program, the emerging concepts of health maintenance organizations and area health education and service centers. His word "groping" is the right one – searchings that are uncertain but that will continue. He describes the role that continuing education must play as answers, or partial answers, are found – continuing education with resources and opportunities utilized on a cooperative regional basis.

## Some Key Relationships

Of the many ways these ten chapters fit together–whether to complete, reinforce or enrich one another – only four key ways will be noted.

First, the Project Model in chapter one and Knox' model of the mentor role in the next chapter are complementary. Knox' model is both larger and more flexible. It has room for such goals as career advancement and self-realization in addition to the problem-solving focus on improving health-care performance. It is particularly appropriate for the "leaders," the "innovators," the "criterion figures," who break new ground and discover Northwest Passages.

Second, the chapter by Fleisher and the one by Dickinson and Verner are also complementary. Fleisher makes clear that all continuing education/training should strive to base itself on demonstrated and quantified deficits in performance. Dickinson and Verner make clear that continuing education/training is needed by all persons, from the specialized professional to the untrained employee and volunteer aide. Still, Fleisher's model is particularly appropriate for the professional person, and Dickinson and Verner's schema lays heaviest emphasis upon the majority of employees in health-care institutions who are at the "subprofessional or nonprofessional level" and who may have had little or no preparation for their roles.

It is apt, perhaps, at this point to observe that nowhere in this volume are distinctions attempted between a "profession" and a nonprofession, or between "continuing education" and "training." Not to attempt such distinctions is not to deny their importance for other purposes. But they were not necessary for the purposes of this book.

On the first distinction, the words of Hughes[2] are fitting:

> . . . in my own studies I passed from the false question, "Is this occupation a profession?" to the more fundamental one, "What are the circumstances in which people in an occupation attempt

> to turn it into a profession, and themselves into professional people?"

Houle[1] states the question similarly. "Much of this difficulty could be resolved if a profession were defined not as a vocation in which a fixed level of achievement of certain standards has been attained, but as an ideal state toward which many occupational groups strive." He lists 14 aims such a group might seek, the fourth of which is "to transmit this body of knowledge and technique to all recognized practitioners both before they enter service and throughout their careers." Then he comments:

> A dynamic concept of professionalization, based on discovery, growth, and innovation, offers the educator both the opportunity and the challenge to use the active principles of learning to help achieve the basic aims of the group with which he works. He becomes not merely the reinforcer of the status quo, as he so often now is, but the needed colleague of all those who work to further the power and responsibility of the vocation. He serves but is not subservient. He enters the professionalizing process at two points. The support of his work is accepted as part of the fourth aim listed above, in which the advancement of continuing education in the content and methods of the vocation itself is considered to be an essential component of the professionalizing process. But also his expertise is required by his colleagues as they seek to achieve each of the other aims. For example, the leaders of an organized vocation may define the accepted patterns of formal relationships between its practitioners and people who work in allied occupations – but the diffusion of that pattern, both within the occupation and outside of it, is the task of the educator.

Just as the purposes of this book did not require an attempt to distinguish between a profession and a nonprofession, neither did they require an attempt to distinguish between "education" and "training." As used in this volume, both refer to systematic learning activities designed to improve the performance of persons already engaged in providing health services, in contrast to training or education preparatory to entrance. In general "training" and "continuing education" differ in the levels of the complexity of and in the degrees of autonomy of responsibility for the tasks performed. However, when training and education are continuous and paths of advancement in careers and responsibilities are accessible, this difference blurs. In the present volume the two terms are used sometimes separately, sometimes together without a governing distinction, although at times the context clearly implies one or the other terms as distinguished in common usage. In the relationship between and the continuum of continuing training and continuing education, the continuing educator has the challenge and the opportunity to contribute his expertise in ways that Houle indicates, as quoted above.

A third theme with several variations in the following chapters is that persons need continuing education in direct proportion to the consequences of their decisions and actions. Dickinson and Verner put the point in one way when they say that the more complex a career is, the more indispensable the continuing education component is and the more time is required for it. Lessinger brings in the role of "management."

> Management is a function, not a unique quality possessed by "leaders." In the conduct of health-care enterprises, it is important that it be seen as a shared function . . . First, planning, organizing, operating, controlling and evaluating – the basic elements of the management function – must often be done by cooperating systems in the pursuit of larger purposes even though there is no formal organized "system." Second, the management function must often be done by the coordinated efforts of linked peer-systems in the pursuit of common purposes, even with only loose organization. Third, management as a function within each institution, agency or system must involve the advisory, policy-making and planning bodies, not just the executive team; this point increases in force as public representatives become more numerous and influential in the planning and policy-setting bodies. This third reason highlights why one of the most important continuing education areas in health-care services must be for board members and managers on the fundamental questions of how our present essentially nonsystem of community health care can be transformed into a publicly responsive system of health-care delivery . . .
>
> . . . unless the basic planners and policymakers – including prominantly the representatives of the public interest – are also regarded as health-care workers, we will be only working on the fringes of a commodity systems of health care. Similarly, we will be only nibbling at the edges of the real need unless we include the managers, the deans of medical schools, the department heads, the specialty societies and so forth.

One last key theme will be noted – one that runs through all the ten chapters. It is that the concept of "education" is becoming larger and more fluid in every way: who the instructors are and who the learners are; the purposes of education; who shares educational and educative functions and responsibilities; what an educational experience is, how it occurs, and where and when. This theme is integral with the theme of "accountability" – the achievement of managerial objectives through education, the achievement of learning objectives by education. Probably the main drive in accountability is the shift of major attention from the "input" of resources to the outcome of the expenditure. In the function of education, this shift focuses attention on the relation between the goals and objectives of education and the assessment of its outcomes. In the instructor-learner transaction, it shifts major attention to learning and the learner. The most desired and valued and observable outcome of all education should be the self-directed process of life-long learning.

* * *

Continuing education is moving from the fringes toward the center of the health-care field. The movement is more than the spontaneous diffusion of new ideas and practices. It is powered by a drive for different and better results. It is a two-stroke drive – pushed by the consumers' demand that the use of resources be accounted for, and pulled by the providers' search for new and better methods of performance. This volume is intended to add both power and lubrication to that two-stroke drive.

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## REFERENCES

1. Houle, Cyril O. "The Comparative Study of Continuing Professional Education." *Convergence,* Vol. III, No. 4, 1970. pp. 7-9.
2. Hughes, Everett C., in *Professionalization,* edited by Vollmer, Howard M. and Mills, Donald. Prentice Hall, Inc. Englewood Cliffs, N.J. 1966.

# The Management of Continuing Learning: A Model of Continuing Education as a Problem-Solving Strategy for Health Manpower

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## INTRODUCTION

This first chapter in the present volume is presented as a model in the sense of a representation of a complex reality simplified and visualized to aid thinking and discussion. Like all the succeeding chapters, it is addressed to professional providers of health care who are engaged in the continuing education of others and to professional continuing educators in the health-care field. Its purpose is not to propose solutions to problems – neither problems of health-care provision nor problems of continuing education for health manpower. Its purpose, rather, is to present a methodology – a system of principles, practices and procedures – that relates the solution of learning problems to the solution of problems of health-care provision. Its intent is to present a way of looking at continuing education for health manpower that will improve the quality of decision-making and cooperative action.

The proposed strategy is appropriate to the solution of operational problems on two scales: (1) the larger scale of the improvement of health care and health-care delivery, in which continuing education is one of several essential management strategies for solving problems; and (2) the smaller scale of the improvement of the performance of persons who provide health care by solving learning problems related to performance. These two scales of operations are integrally related – as will be indicated and depicted later.

### The Organization of This Chapter

This chapter views continuing education as a problem-solving process and provides a model in a sequence of steps for the management of continuous learning. The basis of the model is the scientific problem-solving process. This process is described and presented in Part One (pp. 2-8). It is presented in two stages: first, the basic problem-solving process, depicted in Figure 1 (p. 3); and then the Bicycle (Bi-Cycle) Approach, depicted in Figure 2 (p. 6).

The model depicted in Figure 2 has the advantages of concreteness for physicians in hospitals. It may have the disadvantage of being hard to apply to a range of health manpower wider than physicians in a range of situations wider than hospitals. Therefore, a more general, "analytic," form is presented in Part Two (pp. 8-45), and depicted in Figure 3 (p. 10) – a model of the Continuing Education Process.

The model depicted in Figure 3 may have the disadvantage of being too general to apply in the many specific circumstances that are involved in the vast range of health care and to the multitude of different kinds of health manpower. Consequently, as the process is expounded, step by step, many references are made to literature – particularly to the other chapters in the present volume – and many examples are cited from current practices.

The section on "evaluation" includes Figure 4 (p. 36), which depicts "program evaluation" – a concept that includes the evaluation of both programs of managing health care and programs of continuing education.

The section on "Next Steps" includes Figure 5 (p. 42) – a model of systematic movement toward a goal through a priority of intermediate objectives.

Part Three (pp. 45-46) deals with "context" in two senses – continuing education for health manpower in the context of practice, and health services and continuing education in the context of regionalized cooperative planning and utilization of resources.

After the Model has been followed around the process step by step, three problems are considered in Part Four (pp. 46-50): (1) How can educational planning to meet health manpower requirements be improved by using techniques of determining what those requirements are and are likely to be? (2) How should the many mechanisms of social regulation of health manpower be changed so as to contribute to improved health-care delivery while helping to assure quality of health care? and (3) How can continuing educators of health manpower be better prepared?

## PART ONE: THE BASIS OF THE MODEL

### 1. The Basic Problem-Solving Process

The basic model is simply an adaptation of the problem-solving mode of the scientific method, depicted in Figure 1.

The first step in the scientific method of solving a problem is the recognition of a difficulty. For example, it may be a question to which one does not have an answer; it may be a condition with which one does not know how to deal; it may be an obstacle which one does not know how to remove or surmount; it may be a gap between where one is and where one would like to be.

The second step in the scientific approach to the solution of a problem is an analysis of the difficulty that results in at least a provisional understanding – a testable hypothesis – of its nature and characteristics and that therefore suggests probable ways of dealing with it successfully, ways that will test the hypothesis. In medical terms this step is called "diagnosis" of a problem.

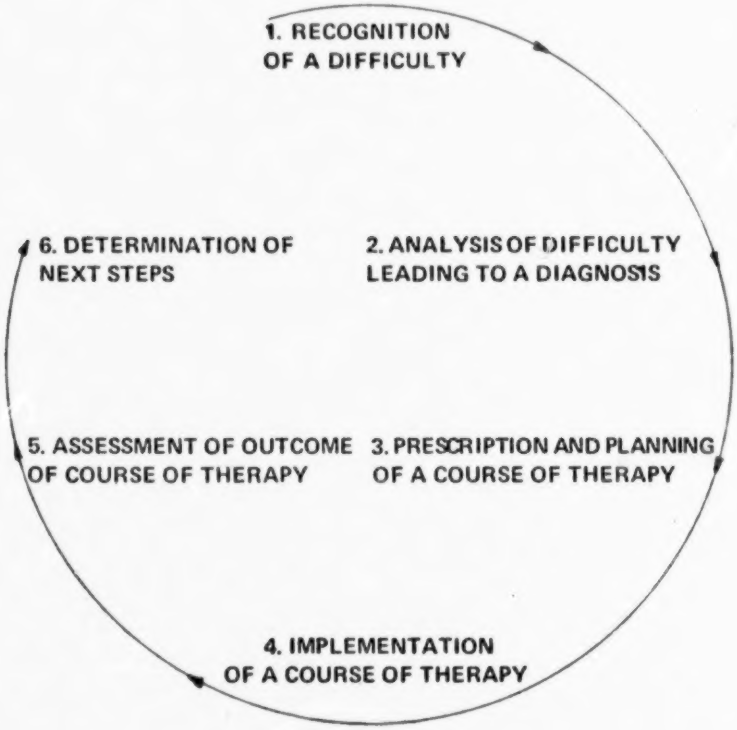
1. RECOGNITION OF A DIFFICULTY
2. ANALYSIS OF DIFFICULTY LEADING TO A DIAGNOSIS
3. PRESCRIPTION AND PLANNING OF A COURSE OF THERAPY
4. IMPLEMENTATION OF A COURSE OF THERAPY
5. ASSESSMENT OF OUTCOME OF COURSE OF THERAPY
6. DETERMINATION OF NEXT STEPS

FIGURE 1
The basic problem-solving process

The third step is to consider all available alternatives, to select a way of trying to solve the problem, and then to plan and organize an attack. In medical terms, this step is called the "prescription and planning of a course of therapy."

The fourth step is the implementation of the course of treatment.

The fifth step is the assessment of the outcome of the course of treatment.

The sixth step is the determination of the steps to be taken next, as indicated by the outcome.

## 2. The Bicycle (Bi-Cycle) Approach

The methodology of continuing education as a problem-solving strategy is an elaboration of the basic process depicted in Figure 1. As previously stated, the basic process is applicable in two scales of operations – the larger operations of improving health care and health-care delivery, of which continuing education is one of several essential management strategies; and the smaller operations of improving the performance of health manpower, of which the solution of learning problems is an essential component. The integral relationships between these two scales of operations are spelled out and made visual in the Bicycle Approach.* This approach was developed by Clement R. Brown, M.D., at Chestnut Hill Hospital, Philadelphia, and has been introduced into about 125 hospitals in the United States and Canada by Daniel S. Fleisher, M.D. Dr. Fleisher's chapter in this book, "Priorities and Data Bases: Their Relationship to Continuing Education," should be studied on two levels: First, it is a detailed and specific case history of the application of the problem-solving method, and, second, it is an example of a method used by physicians in hospitals that is capable of adaptation to a range of

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*The first general publication of the Bicycle concept was by Clement R. Brown, Jr., M.D., and Henry S.M. Uhl, M.D., "Mandatory Continuing Education: Sense or Nonsense?" *Journal of the American Medical Association*, Vol. 213, September 7, 1970, pp. 1660-1668.[9] This article is much more than an exposition of the Bicycle concept. Its central thesis is that mandatory attendance at continuing medical education "for undefined ills would be a disaster and would frustrate the adventurous efforts of an increasing number of educators to find innovative approaches to education for the practicing physician." The Bicycle Approach is given as one illustration of an adventurous effort. However, the authors say, the development of the concept throughout the country would necessarily be slow. "The establishment of a communications network which would combine consultation services with integrated educational components can help solve this quantitative problem in educating physicians." Therefore, the second innovative approach given as an illustration of adventurous efforts is the use of two-way closed-circuit electronic systems. The specific instances cited are the wide-area telephone service (WATS) program, MIST, in Alabama, and the two-way closed-circuit television for consultation service in New Hampshire, devised by the Dartmouth Medical Center. Brown and Uhl's article includes a brief historical summary of continuing medical education in the United States and also a valuable bibliography.

health manpower much wider than physicians in a range of situations much wider than hospitals.

The central significance of the Bicycle Approach is that continuing education of health manpower can be an effective means for the assurance and control of quality health care, and that demonstrated and quantified deficits in health-care performance can be the basis for planning, implementing and evaluating programs of continuing education for health manpower.

Figure 2 is adapted from the Bicycle Approach as developed and expounded by Dr. Clement Brown, Dr. Henry Uhl and Dr. Daniel Fleisher, with some changes to make it applicable to a range of health manpower wider than physicians and to a range of situations wider than hospitals.

When one compares Figure 2 (the Bicycle Approach) with Figure 1 (the basic problem-solving process), it can be seen that in the Bicycle Approach steps 1 through 8 in the outer cycle of health-care operations are preparatory to problem-solving. With step 9 – the identification of "deficits" in performance, as demonstrated by measuring actual performances with minimally acceptable standards of performance – the problem-solving process is entered (the inner circle of educational operations). Steps 9, 10, 11 and 12 are the sequence of the problem-solving process. The assessment of outcome, or evaluation of the corrective learning experience is made by again measuring actual performances against minimally acceptable standards of performance. This assessment of outcome gives guidance to decisions concerning what steps should then be taken.

The following comments on the Bicycle Approach are intended, not to add to Daniel Fleisher's chapter in this book, which is complete in itself, but to lay groundwork for building this specific ("concrete") model into one that is more general ("analytic"), which will be depicted in Figure 3, a few pages on.

*Step 1 – to set priorities.* Fleisher in his chapter calls attention to a seminal article by Williamson, Alexander and Miller, "Priorities in Patient Care Research and Continuing Medical Education,"[64] that describes a three-step process for helping set priorities.

*Steps 2 and 3 in the Bicycle Approach concern data* – the establishment of data bases, and the organization of data bases for use. Fleisher describes the Problem-Oriented Patient Record, as designed by Lawrence L. Weed, M.D., and the Professional Activities Study and Medical Audit Program (PAS-MAP) provided by the Commission on Professional Activities, Ann Arbor, Michigan. These, of course, deserve the most careful attention. But the general point is that the quality of decision-making on all aspects and at all levels of both health-care service and continuing education for health manpower will be improved by data that are adequate, that are organized so they can be applied to problems, and that are easily retrievable. Modern information and communication science and technology, both of which are advancing at exponential rates, make it unnecessary, indeed inexcusable, for any health-care provider or institution not to draw upon resources beyond the immediate data bases.

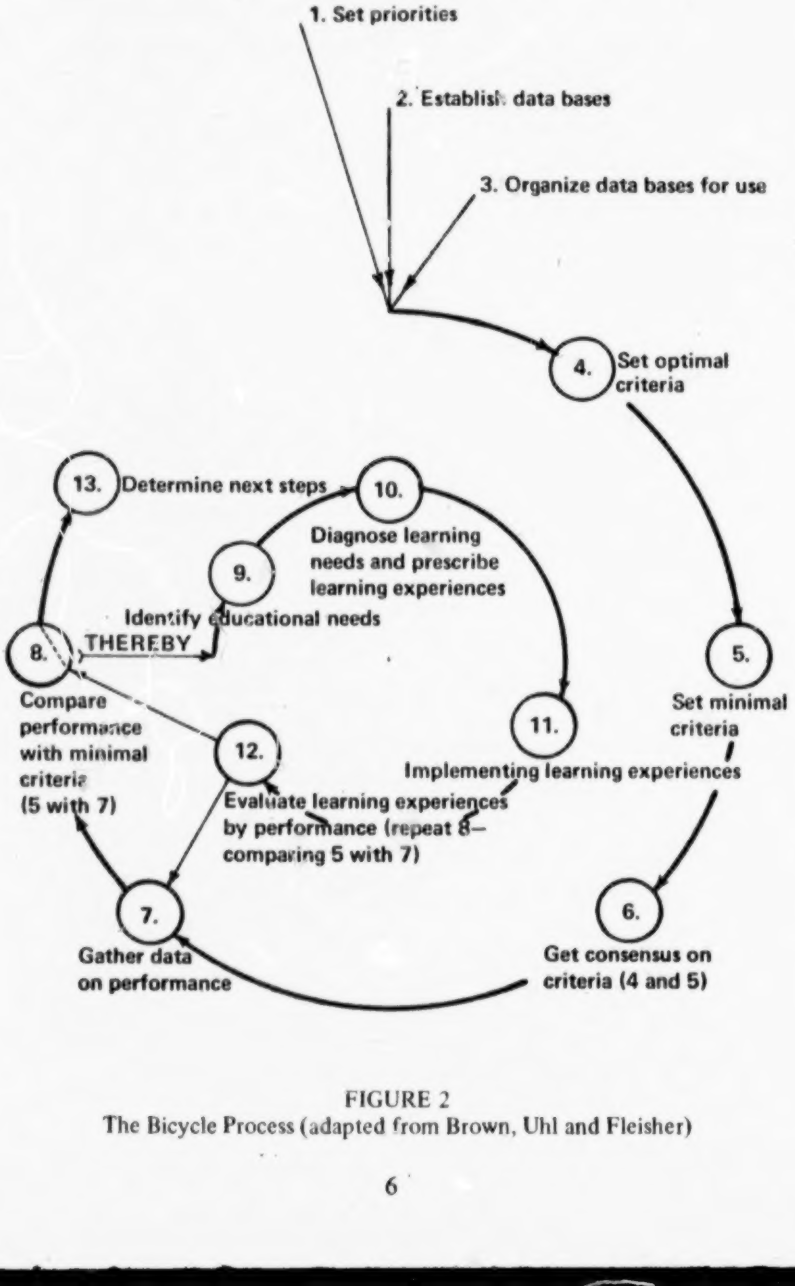
1. Set priorities
2. Establish data bases
3. Organize data bases for use
4. Set optimal criteria
5. Set minimal criteria
6. Get consensus on criteria (4 and 5)
7. Gather data on performance
8. Compare performance with minimal criteria (5 with 7)
THEREBY
Identify educational needs
9.
10. Diagnose learning needs and prescribe learning experiences
11. Implementing learning experiences
12. Evaluate learning experiences by performance (repeat 8—comparing 5 with 7)
13. Determine next steps

FIGURE 2
The Bicycle Process (adapted from Brown, Uhl and Fleisher)

Fleisher names Step 3 "To Computerize Data Sources." However, his first sentence is, "Any system computerized or not that permits the accumulation and retrieval of relevant patient-care data without repeated abstraction of charts would be of benefit to the process outlined . . . . " Computerization can be highly useful but there is no magic in computerization. An individual provider of health care or an institution should not wait until computerization is available to establish and organize data bases. The sensible procedure is to have a "growing need to know" lead into an understanding of what data is needed, what computers can do, and what kind or degree of computerization is fitting.

The phrase "a growing need to know" was given currency by George E. Miller, M.D., in his influential article "Continuing Education for What?"[38] He wrote, "There is ample evidence to support the view that adult learning is not most efficiently achieved through systematic subject instruction; it is accomplished by involving learners in identifying problems and seeking ways to solve them. It does not come in categorical bundles but in a growing need to know."

For this reason, Fleisher does not begin his "walk around" the steps of the Bicycle Approach with steps 1, 2 and 3, dealing with the setting of priorities and the establishment and use of data bases. He begins, rather, with steps 4 and 5 – the setting of optimal and minimal criteria for standards of performance in some area of health service that is of interest to the participants. "Usually people appear to want to learn how to derive and handle data before they are willing to invest time and effort setting priorities. Therefore . . . I start with Number Four, confident that any person or group that uses the process will find it necessary (or expedient) to use the first three steps eventually."

*In steps 4, 5 and 6 Fleisher repeatedly emphasizes that it is essential to involve in the process all the persons whose performances are to be measured against standards that are set.*

The setting of optimal and minimal standards are, of course, a means to identify "deficit" performances. But they are also an educational experience in their own right. In fact, Vergil N. Slee, M.D., President, Commission on Professional and Hospital Activities (CPHA), has written: " . . . the process of *auditing* is the most important *educational* component of the medical audit. And probably the greatest impact is exerted in the step where the staff itself decides what the standards of care should be."[49]

*Step 7 is data gathering on actual performance,* preparatory to the next step.

*Step 8 – the comparison of the records of actual performances with the minimally acceptable standards* – may reveal "deficits of performance." However, they do not reveal the causes of the deficits, nor do they reveal the most probably effective ways of remedying the deficits. The analysis of the nature and probable cause (or causes) and therefore the probable remedy (or remedies) of a deficit in performance is a crucial crossroads for decision-making. It is the point where the responsibilities and functions of the management of the larger cycle of operations of health care and the responsibilities and functions of the continuing educator intersect.

*Step 9 – to identify educational needs* – and *Step 10 – to diagnose the learning needs and prescribe learning experiences* – are taken after the decision has been made that the probable cause of the performance deficit is an educational deficit and that the probable remedy is an educational experience. The diagnosis of the learning needs may be very complex. On these two steps Fleisher says: "The program of educational therapy cannot be specified until the nature of the diagnosed deficit and the judgment of its probable cause(s) are determined. More than 90 percent of continuing education in the health professions appears to presume that the reason for most substandard performance is cognitive (i.e., the causes are deficits in knowledge) and that therefore the therapy should be the transfer of information. The experience I have had for three years with more than 1,000 persons in about 125 hospitals is contrary to this assumption. Attitudinal and organizational problems have far exceeded all other deficits in hospitals as revealed by the standards and the data."

*Step 12 is to evaluate the learning experiences by once again comparing performance with minimal criteria.* (We have skipped Step 11 – "to implement learning experiences.") Suppose that remeasurement of performance against criteria is satisfactory. Then the assumption is justified that the problem has been solved. But suppose that the remeasurement reveals that in some cases the intended improvements did not occur to an acceptable degree. Then the entire process of problem-solving should be re-examined.

*Step 13 is to determine next steps.* Whether the evaluation of results is satisfactory or not, the question still is what to do next.

In all cases where satisfactory improvement of performance has been attained, Fleisher includes the step "to monitor periodically." (This activity is not shown in Figure 2.) Monitoring is concerned with the maintenance of improvements – a step that is included in the general model for this chapter, to which we now turn.

## PART TWO: A MODEL OF THE PROCESS OF CONTINUING EDUCATION

Model-builders distinguish between a "concrete" model, which has specific application to a particular situation, and an "analytic" model, which has general application to many kinds of situations of the same kind. Each type of model has advantages and disadvantages. On the one hand, a "concrete" model has clear application in the specific situation for which it was designed, but it does not have so clear application in other specific situations, even though they are in the same general field. On the other hand, an "analytic" model gives a wider framework for thinking but whoever uses it has to adapt it or provide details in order to apply it to his particular situation. The difference is like the one between a general diagram of the electrical system in "any" house and the diagram of the electrical system in "my" house. The Bicycle Model, depicted in Figure 2, is a "concrete" model specifically developed for physicians in hospitals. The Model of the Continuing Education Process in this chapter was developed for many different kinds of health manpower in many different kinds of situations. It is an "analytic" model. It has the disadvantage of its "analytic" type. How to apply it to a specific situation may not be clear. To compensate in part for this disadvantage, the discussion of the model will include references to literature and illustrations from practice. Figure 3 is a diagram of a Model of the Continuing Education Process.

A model of the problem-solving process of continuing education depicted in Figure 3 is an elaboration of the basic problem-solving process depicted in Figure 1, and an "analytic" form of the "concrete" model depicted in Figure 2. The disadvantage of the form depicted in Figure 3, as was mentioned, is that all by itself it may not be specifically applicable to continuing education for health manpower. For help in specific applications the reader is referred to the following:

A. *Other chapters in the present volume:*

1. "The Process of Planning Programs of Continuing Education for Health Manpower," by Dorothy J. Hutchinson. This chapter systematically follows the process all the way around (not necessarily with the same labels and numbers of steps, of course, because the correspondence is organic, not mechanical.)

2. "The Provision of Inservice Education for Health Manpower," by Gary Dickinson and Coolie Verner. Their emphasis is upon the systematic provision of training within institutions. (Again, the correspondence of the organization and presentation of their analysis is not mechanically identical with the schema depicted in Figure 3 but is, rather, consistent with it philosophically and logically. This qualification concerning the lack of exact correspondence applies to all the other references that follow to other chapters in this book and will be taken for granted.)

3. "The Health-Care Practitioner as Instructor," by Hilliard Jason. He focuses, not upon the person who has primary responsibilities for instruction, but, rather, upon the person whose primary responsibilities are for health care, and Jason develops this person's role as an instructor (in both formal and informal ways) of others – colleagues, those he supervises, those who supervise him, patients and their families. His argument

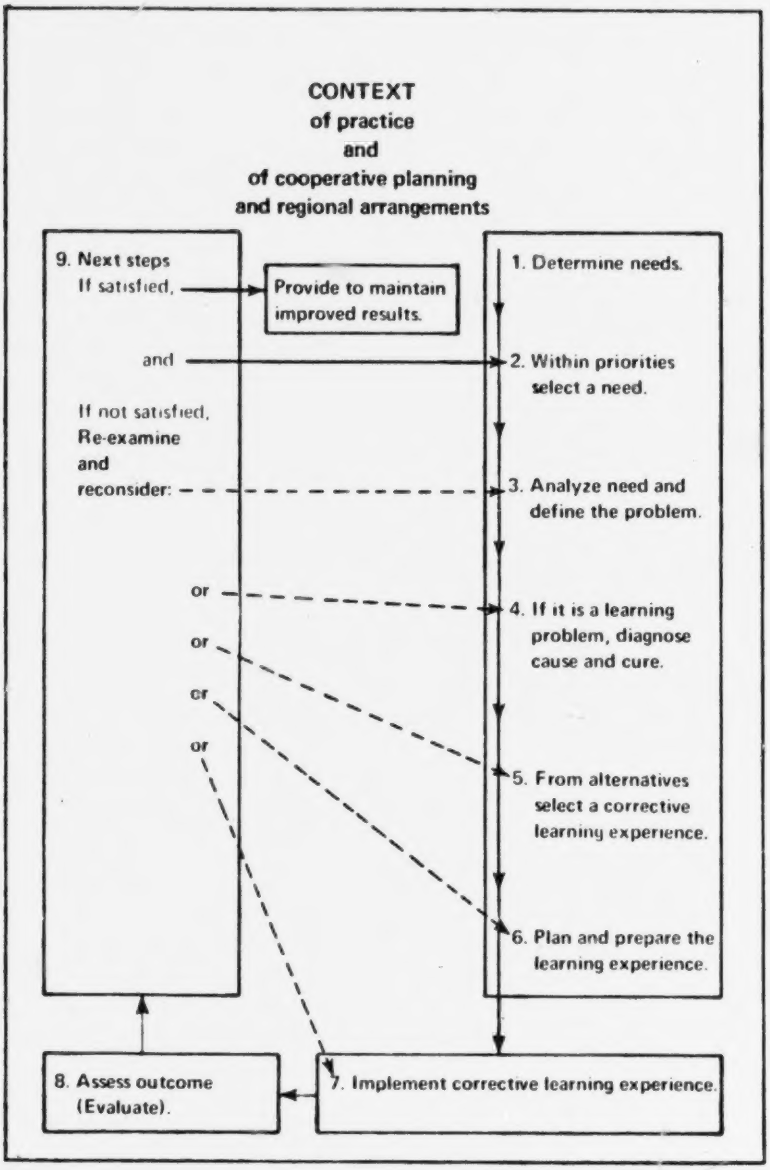
CONTEXT
of practice
and
of cooperative planning
and regional arrangements
9. Next steps
If satisfied,
Provide to maintain improved results.
and
If not satisfied,
Re-examine
and
reconsider:
or
or
or
or
1. Determine needs.
2. Within priorities select a need.
3. Analyze need and define the problem.
4. If it is a learning problem, diagnose cause and cure.
5. From alternatives select a corrective learning experience.
6. Plan and prepare the learning experience.
7. Implement corrective learning experience.
8. Assess outcome (Evaluate).

FIGURE 3
Model of the Continuing Education Process
(Dotted lines indicate alternative next steps.)

is two-edged: The practitioner must be an instructor not only of others but of himself also, and, as Jason says, one of the best ways of self-instruction is to undertake to instruct others.

4. "Effective Caring: An Approach to a Rational Scheme for Financing Continuing Education for Health Manpower," by Leon M. Lessinger. The main import of this chapter is "accountability," but, since one of the essential concerns of accountability is effectiveness, much of the chapter is directly related to educational programming decision-making and procedures.

5. "Life-Long Self-Directed Education," by Alan B. Knox. This chapter serves a special purpose. It was deliberately built as a model for the role of "mentor" – mentor of the continuing education both of one's self and of others. Knox' chapter is fully consistent with the problem-solving model presented in this chapter. In addition, it provides a model for an entire realm of continuing education that is not explicitly considered in the present chapter.

6. Fleisher's chapter, "Priorities and Data Bases: Their Relationship to Continuing Education," should be referred to both with regard to such specifics as the determination of need, the involvement of participants, and the evaluation of outcome, and also with regard to his discussion of "generally agreed-upon principles governing the way adults learn best."

B. *Other Models*

1. *Continuing Medical Education in Community Hospitals: A Manual for Program Development.*[52] This manual was specifically designed for physicians and community hospitals, as its title makes clear, but, like Fleisher's chapter in this book, it has wider implications and applications.

2. *Training and Continuing Education: A Handbook for Health Care Institutions.*[24] This book was developed, with careful testing, by the Hospital Continuing Education Project of the Hospital Research and Educational Trust under a grant from the W.K. Kellogg Foundation. Its organization provides a conceptual model. Its details make it a "how-to-do-it" handbook. (More specific references will be made to this handbook in the present chapter, with regard to the determination of needs.)

C. *Other General Sources*

Two books are recommended that give both comprehensive and coherent conceptions and clear guidance applicable in a wide range of situations.

1. Houle's book[25] provides a model for designing not only all adult education activities but all education activities. The system of "the design" is in two interrelated sets of actions. The first set is deciding in what kind of situation the process of education is to occur. The second set of actions is applying to the situation a framework (or model) of planning and analysis. The situations are classified in eleven categories, broadly divided

into those which are on an individual, a group, an institutional or a mass basis. The framework (or model) is made up of components – the four main groups of which are objectives, the elements of the format, the adjustments to fit the format into the milieu, and evaluation.

2. Mager and Beach's book[35] describes and analyzes the steps to be taken in a systematic development of a course in any vocational or technical area, and many academic areas. The steps are in a closed loop of three phases – preparation, development and improvement, and then back to preparation again.

## A WALK AROUND THE PROCESS

The sections that follow will consider the steps depicted in Figure 3 in sequence. The purpose of the "walk-around" is not to expound "how to do it," which is done in other places, some of which will be cited. Its purpose, rather, is to make a few explanatory comments and to give some specific references and illustrations. Because the process of continuing education is of an organic, rather than a mechanical nature, many of the comments, references and illustrations will have bearing beyond the particular step under which they are included.

As a kind of map in the "walk around" the continuing education process, before each step is discussed, all nine steps will be listed, with the one, or ones, under consideration, italicized, thus:

1. *Determine needs.*
2. *Within priorities select a need.*
3. Analyze need, define the problem.
4. If learning problem, diagnose cause and cure.
5. From alternatives select a corrective learning experience.
6. Plan and prepare learning experience.
7. Implement corrective learning experience.
8. Assess outcome (evaluate).
9. Determine next steps.

### *Step 1. Determine Needs,* and *Step 2. Within Priorities Select a Need*

These two steps are preparatory to entering the problem-solving cycle. They involve such activities as gathering data, organizing them for use, and relying upon them in analysis and decision-making. These decisions concern priorities of concern and also standards by which performances are to be measured as satisfactory or unsatisfactory.

The importance of the setting of priorities merits special attention. A person or an organization always sets priorities, one way or another. Some things always get attention, other things tend to be neglected. Some things get major attention, or first in order; other things get minor attention, or later in order; and so on. Not to set priorities according to some rational scheme is to let priorities be set irrationally – by default, accident, whim, politics or whatever.

Fleisher cited the article by Williamson, Alexander and Miller.[64] Briefly, its three steps for helping set priorities are: (1) the determination of needs by the use of data and the ranking of them in an order of priorities by agreed-upon criteria; (2) the determination of the amount of impairment that might be preventable or reparable by current knowledge and resources; and (3) the determination of the extent to which the preventable or reparable impairments were not prevented or repaired. This way of determining priorities leads naturally into the cycle of standard setting, research into performance, and so on. The point is not that the method designed by Williamson and his colleagues is applicable or even adaptable to all situations; many educational situations will require completely different procedures. The point is that the setting of priorities is a problem capable of a rational systematic attack, with guesses, intuition, hunches or special interests gradually being replaced by the use of thoughtfully designed criteria based upon objective data. The designing and improvement of methods of priority-setting obviously ranks high in the unfinished business for both health-care-providers and continuing educators of health manpower.

Rational methods of gathering and using data in the setting of priorities, the determination of needs and the formulation of standards are developing and spreading. The following list calls attention to signficant developments and/or literature concerning them.

1. *The Problem-Oriented System.*[26] This book, besides giving background information and considering practical aspects, has parts on "educational implications," "nursing implications," "ambulatory care," "private practice, patient care and continuing education," and "the computer and the problem-oriented system."

2. *The Problem-Oriented System in Private Practice in a Small Town.* See the chapter under this heading by Harold D. Cross, M.D., in the book cited immediately above. See also the following books or articles by Cross and his colleague J.C. Bjorn, M.D.[6, 13, 5]

3. *Review of records.* The Missouri Society of Internal Medicine offers its members a review of office clinical records. It is voluntary and anonymous for both the physician whose records are being reviewed and for the reviewer. The doctor makes available a set of copies of a fair sample of typical recent patient record charts (blocking out all identifying items); the Society forwards the set of copies without name or address to a member of the Professional Review and Quality Standards Committee of the Society; the set of records is reviewed anonymously in the light of ten quality standards; the copies and critique of records are returned, providing for anonymity; after a period of six months, the physician may submit another chart in the same way to assess improvement. For more information, write Daniel L. Dolan,

M.D., Missouri Society of Internal Medicine, 3036 Gillham Road, Kansas City, Mo.

4. *Review of performance criteria.* In West Virginia physicians set their own criteria for patient care, select their own peer, and have their records audited against their own criteria. The technical details of this project are handled by trained personnel outside the doctor's office, thereby keeping him free for his daily work. The plan, designed by Daniel Hamaty, M.D., internist and active member of the state medical association, is called the West Virginia Medical Association's Project of Continuing Education of West Virginia Physicians Through a Voluntary Self-Audit – Peer Review of Patient Care.[44, 18]

5. *Peer Review.* The American Medical Association has a manual in two volumes prepared by the Division of Medical Practice, Department of Insurance and Practice Management of the AMA.[2] The volumes give the major considerations for the successful implementation of peer review, defined as "the evaluation by practicing physicians of the quality and efficiency of services ordered or performed by other practicing physicians." They include also a history of peer review and its organization; eight steps for implementation, funding and staffing; utilization review; and legal considerations. Eight appendices include the AMA's guidelines, examples of programs, samples of criteria studies; data sources, etc. The volumes are loose-leaf, thereby enabling constant revision.

6. *Medical Audit.* A serious question is whether the insistence by health consumers and legislative bodies upon "accountability" through external monitoring will damage the effectiveness and educational results of the internal medical audit. This matter is discussed in an important article by the director of the Commission on Professional and Hospital Activities.[50] Slee differentiates between the medical audit and professional standards monitoring. The former is a system of continuing medical education that evaluates the quality of medical care as it can be seen in medical records. The latter is done by surveillance groups from outside and in no way provides anything toward the educational process, Slee says. He calls upon the medical profession to maintain the internal medical audit as an educational function so that it will not be lost in the development of the external audit for public accountability.

7. *Nursing Audit.* Two basic documents are noteworthy. One is a summary of the unit as it functions as an evaluation tool in nursing and an outline of its evolution, based upon the experience of the Department of Nursing at the University of Illinois Research and Educational Hospitals.[15] This booklet is available from the National League for Nursing, 10 Columbus Circle, New York, N.Y. 10019. The other, a book,[45] is a guide for nursing administrators, supervisors and staff for using the nursing audit as a quality-control measure. It recommends a systematic use of the patient-centered nursing audit to determine quality, and it gives examples of the

development and use of the method in hospitals, nursing homes, and public health agencies. Appendices include directions for use in selecting samples of records for auditing, and also forms and readings.

8. *Assurance of Quality in Nursing.* Consult "Quality Assurance in Nursing Care," a Position Paper prepared by the Wisconsin Regional Medical Program Nursing Committee, 1973, available from the University of Wisconsin-Extension, Health Sciences Unit, Department of Nursing, Madison, Wis. 53706.

9. *Determination of Need.* Consult Chapter 2, "Learning Needs – Basis for Programming," and Chapter 3, "Conducting a Learning Needs Analysis," in *Training and Continuing Education,* cited earlier.[24]

### MAP FOR THE "WALK AROUND"

1. Determine needs.
2. Within priorities select a need.
3. *Analyze need, define the problem.*
4. If learning problem, diagnose cause and cure.
5. From alternatives select a corrective learning experience.
6. Plan and prepare learning experience.
7. Implement corrective learning experience.
8. Assess outcome (evaluate).
9. Determine next steps.

### *Step 3. To Analyze the Nature of the Need and to Define the Problem*

The demonstration of a deficit in performance in itself is not likely to reveal either the probable cause(s) or cure(s). The analysis of the nature and therefore of the probable remedy, or remedies (as was remarked in the discussion of the Bicycle Approach) is a crucial crossroads for decision-making – a crossroads, because it is a point of intersection between the responsibilities and functions of management and the responsibilities and functions of continuing education/training. A faulty assumption that the cause is an educational deficit will result in an educational effort that is bound to fail. The consequence will be a waste of time, energy and resources. Beyond that, another consequence may be a lowering of the regard in which the educational/training function is held by management and within the organization. A correct judgment that some or all of the causes and remedies of the specific deficit in performance lie in areas of managerial or administrative policies or procedures not only may lead to the solution of the problem, but may also demonstrate persuasively that the educational/training function of an organization is integrally related to other managerial and organizational strategies. (The causes and cures might, of course, be a combination of managerial/administrative and educational/training deficits.) A correct judgment that the cause(s) and cure(s) are of an educational nature is the first step toward a solution of the problem. And, more than incidentally, it may be also a convincing demonstration that education/training is a precise and useful strategy in its own right and place.

Since the analysis of a performance deficit is an intersection of management (broadly defined) and education, managers (broadly defined) and continuing educators should have close working arrangements. The continuing educator should have relationships with and knowledge of all managerial strategies and procedures, and the manager should have at least general familiarity with the strategies and procedures of continuing education and training.

Helpful advice concerning the analysis of the nature of performance deficits will be found in Lessinger's chapter in this book, "Effective Caring: An Approach to a Rational Scheme for Financing Continuing Education for Health Manpower." He deals with the question of whether deficiencies in performance can probably be remedied by educational measures or by some other means. He gives an account of the strategy expounded by Kauffman.[27] Lessinger also quotes at length from Mager and Pipe.[34] The pages he quotes give a "Quick Reference Checklist" and "key issues" and "questions to ask."

MAP FOR THE "WALK AROUND"

1. Determine needs.
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### *Step 4. If It Is Decided There Is a Learning Problem, Diagnose Its Cause and Cure*

Some clues to ways of diagnosing probable cause(s) and probable cure(s) are given in the passages that Lessinger quotes from Mager and Pipe,[34] and some clues can be found in other chapters in the present volume. However, any diagnosis must be specific (as Fleisher makes clear), and the following general comments are intended to deal with fundamentals.

First, the cause(s) and cure(s) probably lie in what psychologists and educators call the "affective domain" – contrary to the assumption of much continuing education and training that most learning problems are "cognitive" in nature.

Second, many efforts to bring about improvement in the performance of persons must seek to bring about changes both in the institutional forces that involve the persons concerned and in the personal forces within them.

A third point has to do with the nature of health care institutions. A hospital, for example, is not made up of two organizations – business on the one hand and medical on the other. Rather, a hospital is a single organization whose purpose is to arrange for, and to a large extent control, the delivery of total patient care of the highest quality. The institutionalization of medical care results in the institutionalization of liability, as a number of court decisions has made clear.* The institutionalization of liability is the institutionalization of responsibility to provide the means to ensure responsible performance, and continuing education/training is a primary means.

A fourth point is that, although a health-care institution is a single organization, nevertheless two distinctly different "styles" of management are required: One is the hierarchical style, requiring the precise specification and close supervision of procedures; the other may be called the "collegial" style, requiring scrupulous respect for the autonomy of professional decisions and practices. The styles, not only of management, but also of training and continuing education, must be sensitively appropriate to these two kinds of requirements.

All four of these points are too large and complex to be developed here and yet too important to be neglected. Two books should be noted especially. One by Neuhouser[40] was probably the first empirical attempt to see what effect different hospital management techniques have on costs and quality of care. The author states three implications of his findings. One is that the Joint Commission on Accreditation of Hospitals "might expand its role of increasing visibility of consequences by providing the medical staff and hospital management with basic information on their comparative performance." Another implication is that trustees who are indifferent to or unaware of their hospital's real performance "provide no incentive for the administration and medical staff to improve performance." A third implication is that "externally generated managerial techniques . . . do not have the impact on performance that internally generated management techniques do."

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*Probably the best single compendium of laws and court decisions concerning liability of hospitals and other health-care institutions and of doctors and other health-care practitioners is *Law Institute on Hospitals and Medicine*, prepared and published by the Continuing Education Department, School of Hospital Administration, and Department of Legal Medicine, School of Medicine, Medical College of Virginia.[36]

The second book, edited by Georgopoulos,[17] was the result of a conference reviewing recent social-psychological research on hospital organization and current thinking about the health-care field. A key thought is that for many hospitals the administrator is "the person most qualified and most likely to act as change agent. And yet if he is to be increasingly held accountable for hospital effectiveness, he must also be able to hold program and subunit heads, including doctors, similarly accountable ... The administrator's expertise is that of an integrator structuring the perceptions among producers, and between producers and consumers, so that change can be effected without destroying organizational integration."

The import of these four points is that not only is the analysis of a performance need, or deficit, an intersection of management and education, but the analysis of a learning need, or deficit, is also an intersection of management and education. The import underlines the remark made earlier that managers (broadly defined) and continuing educators should have close working arrangements; that continuing educators should have close knowledge of all managerial strategies and procedures; and that the managers should have at least general familiarity with the strategies and procedures of continuing education and training.

Four types of instances, illustrating methods of determining, analyzing and diagnosing learning needs, or problems, are given below – chosen to provide a variety of both methods and kinds of health manpower.

1. *The determination and diagnosis of learning needs within hospitals.* Survey techniques have been highly developed both by some universities and by some associations. In 1965 Pennsylvania State University reported on a survey of training needs in Pennsylvania hospitals.[14] More than 6,000 persons – administrative, supervisory and professional personnel – in 213 hospitals responded to questionnaires and more than 600 others were interviewed. They identified as their most prominent need improvement in all aspects of supervisory performance. Many supervisors had been promoted with little or no preparation. Specifically they identified needs in dealing with new dimensions of patient care, the changing role of the nurse, the handling of medical records, and the proper uses of equipment and supplies, and the fundamentals of nutrition. These needs were organized in reports on nursing service and nursing education, clinical and radiology laboratory service, medical records department, dietary department, engineering and maintenance, business office and purchasing, personnel directors and institutional care departments.

These needs were similar in many respects to those identified in 1956 by the Catholic Hospital Association.[11] Nearly 2,000 supervisors and other high-level personnel in 281 hospitals were asked, in interviews, conferences and by mail, to list what they needed to learn in order to do their jobs more effectively. They identified needs to learn how to build better employee relations, how to communicate, how to be a manager or administrator, rather than needs to learn principles or acquire general knowledge. A later survey revealed that of 371 hospitals responding, 21 percent had no training programs for nonsupervisory employees, and 40 percent had none for supervisory personnel.[51]

2. *The determination and diagnosis of learning needs of Michigan physicians.* The study (directed by Floyd Mann) made of Michigan physicians between 1968 and 1970 by the Center for Research on Utilization of Scientific Knowledge (CRUSK), is one of the most carefully planned studies of group characteristics and group needs for continuing education that has ever been made. It deserves attention for its methods as much as for its findings. The study was a two-phased operation that began in the fall of 1968. The first phase was a survey of the attitudes and opinions of physicians regarding continuing education. The second phase was designed to identify the more active and influential physicians in the formal and informal information exchange systems that exist within medical staffs and to learn what distinguished these men and women from their colleagues. The exacting procedures followed in the study, and the many findings and the implications of these findings should be pondered carefully. A reprint of a series of articles in *Michigan Medicine* is available from the Center for Research on Utilization of Scientific Knowledge (CRUSK), Institute for Social Research, University of Michigan, Ann Arbor, Mich. 48106. The articles reprinted appeared in *Michigan Medicine* monthly from November 1970 through June 1971.[37]

3. *Physician profile programs.* The prototype program was developed by the Department of Postgraduate Medical Education, University of Wisconsin. The three steps of the Individual Physician Profile (IPP) are: (1) Data is gathered concerning the patient problems that the physician most often treats in his private practice, providing a *practice profile;* (2) based on the profile, an *examination* is designed to assess the practitioner's knowledge pertinent to his patients' problems (the examination questions are in categories corresponding to the International Classification of Diseases, and are stored in a computer for rapid retrieval); (3) with a practice profile and the results of an examination, a *consultant* (faculty member) meets with the practitioner to design a continuing educational program tailored to the practitioner's needs. For more information, write Sigurd E. Sivertson, M.D., Department of Postgraduate Medical Education, University of Wisconsin, 307 N. Charter St., Madison, W 35706. For a brief account, but, more importantly, for an aid to adapt the program to individual use, see *Patient Care.*[43]

4. *Self-assessment programs*

a. The American Medical Association in late 1971 published a *Directory of Self-Assessment Programs for Physicians* giving essential information on self-assessment programs sponsored by nineteen specialized professional societies, one county medical society and one university.

b. The Board of Trustees of the American Medical Association in February 1972 approved the establishment of a Self-Assessment Resource

Center to provide means for evaluating self-assessment programs. The Center is a joint effort of the AMA's Division of Medical Education and the Center for Educational Development of the University of Illinois College of Medicine.

c. On June 30, 1972, HSMHA made a two-year grant for the project which is being conducted by the University of Illinois Center for Educational Development. The indications are that the project will aim to develop self-assessment tests that can be varied to meet the needs of particular physician groups, and self-assessment tests that assess ability to use information rather than just to acquire it.

For a copy of the *Directory of Self-Assessment Programs for Physicians,* write the Department of Continuing Medical Education, AMA, 535 N. Dearborn St., Chicago, Ill. 60610. For information concerning the AMA Self-Assessment Resource Center, write Leo L. Leveridge, M.D., at the same address.

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9. Determine next steps.

### *Step 5. From Alternatives Select a Corrective Learning Experience,*
### *Step 6. Plan and Prepare the Learning Experience,* and
### *Step 7. Implement the Learning Experience.*

These three "steps" are considered together because the process from the consideration of alternatives through the implementation is more like a flow than a series of steps.

Other chapters in the present book, particularly those by Hutchison, Dickinson and Verner, Jason, and Knox discuss these aspects in detail. Only two introductory comments will be made here.

First, it is pointless to make decisions about content, modes, methods, techniques, devices, and so on, without full consideration of the participants, objectives, situation, setting and so on, in light of their systemic relationships in the flow from planning through implementation. This point is worth stating and restating, however banal it may sound, because many, perhaps most, educational decisions concerning these components and these stages are made without a comprehensive and coherent design.

Two quite different books may prove helpful. In one, Gagné[16] gives an exquisite blueprint for a "learning hierarchy" in which more simple abilities are built into more complex abilities. He has a perceptive section on the special strengths and weaknesses of the major educational methods, modes and techniques. In the other book, Bretz[8] gives the reader a large body of organized factual information about communication media. He defines and describes 28 specific communication media; discusses the difference between media and instructional aids; and proposes a set of criteria by which communication media may be distinguised from nonmedia, one medium may be distinguished from another, and a single medium distinguised from multi-media applications. Such knowledge and understanding would help educators in their decisions all the way from the consideration of alternatives through implementation.

The second introductory comment is that decisions concerning what alternatives and resources to use will be bound absolutely by the limits of the knowledge that the continuing educator has of what alternatives and resources are "available," and what is conceptually and actually "available" will depend to a great extent upon the relationships that the continuing educator and his organization have established with other persons and organizations. One of the main purposes of the Regional Medical Programs was to expand both the perimeter of knowledge about alternatives and resources and the perimeters of "availability" through patterns of cooperative planning and use. The needs for such expansion of perimeters remain and increase. A pervasive concern of Knox in his chapter in the present book is with the "linkage-agent" role of the continuing educator, and Knox' pages are rich both in expositions of the specific functions that the continuing educator can fulfill as a "linkage agent" and in specific suggestions, with concrete examples, of how this role can be performed.

The following list of some literature and activities is intended to illustrate a wide range of alternatives, capabilities and availability.

1. *The National Library of Medicine.*

So many services for research, health care and education at all levels, particularly continuing education, are available through the NLM, and the capabilities for further services are developing so fast that the reader is advised to write the National Library of Information, 8600 Rockville Pike, Bethesda, Md. 20014, asking to be put on the mailing list of the monthly *National Library of Medicine News.*

The reader should also write the NLM's Office of Public Information, same address, requesting a copy of the 1972 *Lister Hill National Center for Biomedical Communications Report to Congress,* available without charge.

The purpose of the Lister Hill National Center for Biomedical Communications is to adapt existing techniques and develop new computer and communication technologies for incorporation into operational biomedical communication networks in support of health-care delivery, education and research. Among the projects summarized are satellite networks, cable television networks, the New England Microwave Network and wireline networks.

Satellite networks include the Alaska experiment – the use of a communication satellite broadcasting radio to connect isolated communities without physicians and consultants at medical centers; continuing education of health aides, nurses, and physicians; and the education of villagers in personal health matters. A similar network is planned for Micronesia, the Trust Territory of the Pacific Islands, and the American Samoa in 1973. In 1973 also, NASA will launch the ATS-F satellite, with full video capability, which will be used for experiments in the Northwest (including Alaska) and the Rocky Mountain states.

Cable television networks are being used in pilot projects to improve health-care delivery and self-care education in ghetto areas in Denver and the Mt. Sinai-East Harlem area of New York City.

The New England Microwave Network brings medical school classrooms to the small community hospital and simultaneously brings the community health professional to the university classroom. Beginning in New Hampshire, the network is being extended into Vermont.

One of the wireline networks is MEDLINE (MEDLARS On-Line), providing an on-line bibliographic searching capability for libraries at medical schools, hospitals and research institutions throughout the country. Eleven Regional Medical Libraries provide the managerial and document-delivery skeleton to the MEDLINE network. These outlets and capabilities are being rapidly expanded.

Another wireline network project is to link up computer simulation centers – first at Ohio State University Medical center, the University of Illinois Medical Center in Chicago,* and the Laboratory of Computer Sciences of Massachusetts General Hospital and Harvard Medical School, and later at other places.

The NLM conducts literature searches. Three recent ones of interest to continuing educators of health manpower are Numbers 72-10, 72-11, and 72-13 on audio-visual aids in the teaching of medicine, nursing and allied health occupations (respectively).

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*Knox' chapter in the present volume has a detailed step-by-step illustration of how the University of Illinois' PLATO system can be used in continuing education.

### 2. *The Postgraduate Medical Institute in Medical Education*

Established in 1953, PMI is a non-profit educational corporation sponsored by the Massachusetts Medical Society. Its mission is to improve the quality of health care through education. Its activities include:

Consulting with community hospitals concerning implementation of continuing medical education programs.

Evaluating the effectiveness of consultation as a stimulus to the development of continuing medical education programs of community hospitals.

Studying the use of consultation in generating hospital education programs pertinent to the unique problems of the poor in the communities served by the hospital.

Preparing clinical medicine self-assessment teaching examinations for general practitioners.

Providing training and consultation to aid in developing community hospital libraries.

Developing comprehensive health science core libraries (medical, nursing and allied health) for community hospitals.

Field-testing and assisting in implementing the Medical Core Library.

Collaborating with other organizations in developing and implementing continuing education programs.

PMI activities involve more than 100 hospitals in Maine, Massachusetts, New Hampshire and Rhode Island. Drawing on ten years of experience, PMI devised *Continuing Medical Education in Community Hospitals: A Manual Program Development* – a model that was cited earlier.[52]

PMI plays a large role in the development and improvement of hospital libraries through its Core Library Program, which eventuated in an Integrated Health Science Core Library for physicians, nurses and allied health practitioners, and a program to train library supervisors, through the New England Regional Medical Library Services (NERMLS). More than 100 hospital libraries throughout New England have PMI-NERMLS-trained library supervisors. In 1972 PMI received a grant from the National Library of Medicine to develop and evaluate a training program for a new type of health manpower – the Health Information Specialist.

Beyond community hospitals and their libraries, PMI has produced three annual series of Family Practice "Core Content Review Self-Assessment Examinations," which have been taken by thousands of physicians in more than 40 states.

For more information, write Norman S. Stearns, M.D., Executive Director, Postgraduate Medical Institute, 30 The Fenway, Boston, Massachusetts 22215.

3. *The "MIST" Program*

Several states now have programs similar to, adaptations of or elaborations of the pioneering Medical Information Service via Telephone (MIST) program developed by the University of Alabama School of Medicine and the Alabama Regional Medical Program to meet the information and education needs of physicians. Among the objectives of the program are (1) to improve patient care; (2) to aid the practitioner at the time he needs help with a particular patient problem; (3) to provide communication between practicing physicians and the faculty of the University of Alabama Medical Center, such communication (a) to alert the faculty, including the continuing education faculty, to the changing needs of the community physicians, (b) to continue the medical education of the academician by giving him a better view of medical practice and health-care delivery, and (c) to serve as a source of continuing education for the practicing physician. By means of the state-wide WATS lines and centrex tie-lines, immediate person-to-person consultation is available 24 hours each day. Each call is routed, taped and analyzed. When appropriate, the Medical Library sends pertinent literature to the caller within three days. For further information, write to Margaret S. Klapper, M.D., Division of Continuing Medical Education, University of Alabama School of Medicine, 1919 Seventh Ave., South, Birmingham, Alabama 35233.

4. *Nursing Dial Access*

The Nursing Dial Access program provides around-the-clock short tapes on a variety of nursing and medical subjects and may be used from any telephone by Wisconsin callers. The library of tapes provides core information in the categories of nursing care emergency situations, new procedures and equipment, recent developments in nursing and legal aspects of nursing. NDA averages 1,000 calls a month. The Wisconsin Physician's Dial Access Library pioneered this medium and found it a feasible one for distributing information. The nursing program has enlarged the scope of the service in Wisconsin, and both the physician and the nurse programs have assisted other states to develop similar services. Three accounts of the NDA are cited.[41, 42, 12]

5. *National "MediCall"*

The first nationwide physicians' information service began July 15, 1972. The idea for the service, "MediCall," was conceived by John G. Bellows, a Chicago ophthalmologist and secretary of the American Society of Contemporary Medicine and Surgery (ASCMS), which sponsors the service. It is patterned after the MIST program, which serves Alabama physicians.

Service is provided 24 hours a day every day to all doctors in the continental United States who want information from an experienced specialist in a particular field. MediCall has obtained the services of 80 specialists. A doctor wanting information may place a call to the MediCall headquarters in Chicago, where specially trained telephone operators put him in touch with one of the specialists within a matter of minutes. The service may particularly benefit doctors in remote areas.

Only physicians may use the MediCall service. Physicians who want to discuss a particular medical emergency or problem with a specialist may call 312/782-7888. Participating physicians in the MediCall program can receive credit toward the AMA Physician's Recognition Award.

For more information, write John G. Bellows, M.D., 30 N. Michigan Ave., Room 1600, Chicago, Ill. 60602.

6. *Significant Literature*

a. *Computer Assisted Instruction in the Health Professions*[56]

This book contains papers presented at the Harvard Medical School in the sixth of a series of meetings designed to bring together persons interested in exploring ways in which computers might be used to aid instruction. The papers present experiences with CAI systems and report how they work. Among the systems are (1) the Dial System, to provide "analysis of laboratory data and programmed tutoring in clinical decision theory"; (2) PILOT, for preparing problem-oriented medical records for computer-assisted learning; (3) PLANIT, to enable school personnel to communicate with a computer; (4) Harvard University Computer-based Interactive Instructional System, designed to aid the author-editor in analyzing and modifying an interactive course or laboratory and to deliver individualized instruction; and (5) PLATO, designed to teach the student how to gather and evaluate data, at the University of Illinois. (As mentioned above, Knox in his chapter in the present volume explains in detail one use of PLATO.)

b. *Programmed Individualized Instruction in Medical Education*[33, 32]

These proceedings of the Rochester Conferences on Self-Instruction in Medical Education summarize years of research and development at the University of Rochester College of Education, later extended to the School of Medicine and Dentistry. The books discuss theoretical and practical aspects of programs development, give descriptions of successful and unsuccessful programs, and consider the impact of self-instruction on medical education.

c. *Programmed Instruction and the Hospital*[23]

This report on programmed instruction in the health-care field reviews some recent advances in behavioral technology, principles of teaching machines, procedures for evaluating program effectiveness, and problems encountered in preparing programmed instructional materials. It describes current application in continuing education of professionals and also in the orientation of patients. The last section discusses the value of programmed methods for use with inpatients, outpatients, administrative personnel, technicians and other hospital subprofessionals.

d. *Correspondence Education and the Hospital*[22]

This report of a study, based primarily upon questionnaire responses from 423 hospitals in the United States, deals with noncredit correspondence courses designed to upgrade hospital personnel skills, performances and job-levels. The report recommended that a central agency focus attention on documentation, research and experimentation, course improvement, and other aspects of correspondence education for hospital personnel.

e. *Patient Care*

*Patient Care* – "the Journal of Practical Family Medicine" – is a magazine that not only deals extensively with continuing education but is itself an instrument for continuing education. The journal, first published in January 1967, has as its objectives: ". . . to help the family physician provide more effective and efficient care for his patients, day by day and on a continuing basis. It is intended for both current reading and continuing reference." It has four special features: "Express Stops" – short summaries; "Flow Charts" – memory aids accompanying some major articles; "Patient Education Aids" – certain articles with messages written specifically for patients; and "Resource Files" – highly selected lists of supplementary reading, available on request at no charge.

*Patient Care* is now published the 1st and 15th days of each month, except July, August, and December, when just the issues of the 1st are published. The price is $1 a copy, $20 per year. It is published by Miller & Fink Publishing Corp., 165 Putnam Av., Greenwich, Conn. 06830.

f. *Journal of Continuing Education in Nursing*

This journal is published bimonthly, Vol. 1, No. 1 dated May 1970. The editor-in-chief is Dorothy J. Hutchison, R.N., M.A., Associate Professor, Department of Nursing, Health Sciences Unit, University of Wisconsin-Extension.* Among its purposes are "to report program designs and educational approaches which have proved effective . . ." and "to present experimental and innovative approaches which offer new and more promising routes to the adult nurse learner." It regularly features important documents, colleague exchange, educational opportunities and book reviews. Suscriptions in the U.S.A. and possessions are $18 for one year, $32 for two years, and $44 for three years. Single copies and back issues, when available, are $3.50. The address of the publisher, Charles B. Slack, Inc., is 6900 Grove Road, Thorofare, N.J. 08086.

g. Digest for Continuing Education in Psychiatry

The Southern Regional Education Board publishes the *Physician's Digest for Continuing Psychiatric Education Programs*. It is designed for persons either planning to teach or teaching in education programs in psychiatry for physicians, but many of the items are useful to other medical educators. It pulls together from the literature and from various people's experiences the most useful points that bear on facets of continuing education for physicians. The *Digest* is not published regularly. There is no subscription price. A single copy or a complete set of back issues is available on request. For information about the project that sponsors the *Digest* or copies of it, write Harold L. McPheeters, M.D., Director, Commission on Mental Illness and Retardation, 130 Sixth St., N.W., Atlanta, Ga. 30310.

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*Professor Hutchison is the author of one of the articles in the present volume.

h. Continuing Education in Psychiatry

*Psychiatric Education and the Primary Physician,* prepared by the American Psychiatric Association's Committee on Psychiatry and Medical Practice, is a report "intended as a guide for those interested in planning programs of continuing education in psychiatry – to orient them to the general goals of the field, to summarize and review achievements to date, to identify issues that continue to be vexing problems, to describe specific methods and programs that have developed, and to indicate possible directions for future activities". Included in the report is an outline of a step-by-step procedure for developing a program for postgraduate training in psychiatry. Copies of Task Force Report #2, *Psychiatric Education and the Primary Physician,* are available for $3 each from Publications Services Division, American Psychiatric Association, 1700 18th St., N.W., Washington, D.C. 20009.

7. *Hospital Research and Educational Trust Training Programs*

Produced by the Hospital Research and Educational Trust – an affiliate of the American Hospital Association – are four "total teaching packages": student manuals, instructor's guides, and supplementary visual aids for use in classrooms or on-the-job training. The packages are: (1) *Training the Ward Clerk,* (2) *Training the Food Service Worker,* (3) *Training the Nursing Aide,* and (4) *Training the Housekeeping Aide.* Information and order forms may be obtained from the HRET, 840 North Lake Shore Drive, Chicago, Ill. 60611.

8. *Self-Instructional Materials Project: Southern Medical School Consortium*

Medical schools within the Southern Region of the American Association of Medical Colleges in 1971 began the Self-Instructional Materials Project. The aims of the project include: (1) the training of faculty for production of self-instructional materials, (2) the try-out of materials among schools, with subsequent revision, and (3) the sharing and dissemination of materials among consortium members.

The activities of the project are to conduct workshops, to build up a "package bank," to reproduce and validate materials, and to publish a directory of materials and a newsletter. The conferences are producing a growing cadre of medical educators who are workshop trainers.

As of the beginning of 1973, 32 medical schools were members of the project, each with a coordinator. The executive secretary of the Self-Instructional Materials Project is Robert Crounse, M.D. The editor is Rita B. Johnson, Ed.D. The editorial staff is School of Medicine, University of North Carolina, Chapel Hill, N.C. 27514.

9. *The Meharry Medical College*

As attention turns to the education – from preparatory through continuing – of health professionals to enable them to provide health care for all – particularly the poor and those who are in rural and urban-ghetto areas – Meharry Medical College becomes increasingly important. The continuing education programs of Meharry – for doctors, dentists and other health professionals – is remarkable in four ways: (1) It is part of a continuum with preparatory education, (2) it is integrated with service, (3) it is integrated with research into health-care delivery, and (4) it stresses the health-care team concept and practice. The President of Meharry is Lloyd C. Melam, M.D. The Director of Continuing Education is Frank A. Perry, M.D., Meharry Medical College, Nashville, Tenn. 37208.

10. *"Open Medical School" in Kansas City*

The University of Missouri-Kansas City (UMKC) has begun a new medical school operated on the concept of an "open medical school" – a community of scholars where medical training is received from active practitioners. Medical education, from preparatory through practice, is viewed as a continuum.

UMKC has already launched and fully funded its undergraduate program on the plan. It has begun and partly funded its program of continuing medical education, which includes: (1) sabbatical leave programs – to give the practicing physician an opportunity to work with a health-care team and renew his knowledge and skills (a monthly stipend of $200 is offered); (2) long weekend doctor-wife programs; and (3) a *locum tenens* house staff program – designed for physicians whose practices are covered by medical residents. These and other programs for doctors, pharmacists, dentists and nurses are to be housed in a new physical facility to be known as the Academy of Health Professions.

For more information, write E. Grey Dimond, M.D., Provost for the Health Sciences, UMKC School of Medicine, 5100 Rockhill Road, Kansas City, Mo. 64110.

11. *The Health Sciences Unit of the University of Wisconsin-Extension*

Health Sciences Unit is the official name given to that area of University of Wisconsin-Extension that encompasses an integrated faculty engaged throughout the state in continuing education, research and service in the health professions and related sciences. The Unit integrates the program activity of the University of Wisconsin-Extension's Departments of Pharmacy, Nursing, Medicine, Community Health Administration, Health Facilities Administration, and Continuing Education in Mental Health. The faculty who make up the Health Science Unit are appointed solely in University Extension, or hold joint appointments with departments across the several campuses in the University System; others have full-time appointments on campus locations and are granted courtesy appointments with the departments and program components in the Unit for communication and programming arrangements.

With the availability of Wisconsin's educational telephone network, it is possible to reach students at over 150 locations through the tele-conference technique. Education is offered through other means, of course. In 1971-72, 77 Wisconsin communities were reached through classroom contact and single lectures reached an additional 81 cities and towns.

Innovative approaches in programming developed by the faculty of the Unit include: the Tele-conference Technique, first used by the Department of Postgraduate Medicine, now serving over 19,474 citizens yearly by many departments and units within the entirety of the University Extension System (which integrates both General and Cooperative); Dial-Access Tapes, initially developed for physicians and nurses, now serving hospitalized patients, consumers seeking health education and information, and students on the Madison campus; Single-Concept Films, a closed-loop audio-visual teaching device for individual or group learning in the health professions; the Cassette Tape Packet, including audiotapes, textual and graphic material for individual or group study; the on-campus lecture/demonstration/laboratory short course to upgrade industrial pharmaceutical technicians; the multidisciplinary learning setting for helping professions concerned with physical and mental handicaps; and the development of individual study packets, either programmed learning or text and directed study materials to upgrade nursing practice.

One of several important spin-offs was in consumer health education. Efforts in model-building in this field led to four Federally-funded demonstrations (under way in Missouri, Maryland, Virginia and Wisconsin). A report on the history and beginnings of these demonstrations is included in Appendix A to this chapter.

For more information, write William L. Blockstein, Ph.D., Director, Health Sciences Unit, University of Wisconsin-Extension, 610 Langdon St., Madison, Wis. 35706.*

12. *Continuing Education in the American Society of Clinical Pathologists*

The continuing educational activities of the American Society of Clinical Pathologists are probably the most comprehensive of any speciality society in the world. All of the ASCP educational programs are available not only to the 18,000 members of the Society, but also to all qualified laboratory personnel, physicians, clinical scientists and allied health personnel. These activities, too many to include in the body of this chapter and yet too imaginative and innovative to be left out, are described in Appendix B to this chapter.

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*Dr. Blockstein is the author of the final chapter in the present volume.

13. *California Medical Association's Accreditation/Certification of Continuing Medical Education*

Medicine in California speaks with a single effective voice through the Scientific Board of California Medical Association, which, since its establishment in 1962, has coordinated and strengthened the scientific and educational activities of CMA. The Scientific Board functions through 11 standing committees and 20 advisory panels. Two of the standing committees are Continuing Medical Education and Accreditation of Continuing Medical Education. In the past few years these committees have introduced bold new approaches to continuing medical education, shifting from the traditional university-centered programs to learning experiences that take place primarily in community hospitals.

The Certification Program (for individual physicians) and the Accreditation of Continuing Medical Education Programs (for hospitals) are assisting practitioners and medical staffs in their systematic pursuit of effective educational objectives. Both the Certification and Accreditation programs are voluntary.

Accreditation and certification of continuing medical education in California are unique in that the emphasis is on improving the quality of continuing medical education and on making it responsive to the needs of the practicing physicians, not on mere hours of "participation."

In 1967 the CMA sponsored a planning and goals conference in continuing medical education. One of the major recommendations was that the community hospital be established as the primary locus for CME for practicing physicians.

Another planning and goals conference, held in 1969, recommended the establishment of a certification program in continuing medical education. This was implemented by the CMA as a voluntary program in 1970. Later CMA developed the "Guiding Principles for Continuing Medical Education in Community Hospitals." In 1971 the Accreditation Committee of CMA began site visits in hospitals that had applied for accreditation of their continuing medical education programs.

The accreditation program is based upon: (1) a commitment by the hospital governing board and medical staff to an effective program of continuing medical education, (2) an assessment of educational needs as demonstrated by quality of patient-care evaluation, (3) educational programs based upon demonstrated needs and relevant to the work done in the hospital, and (4) evaluation of the effect of the educational programs in terms of its impact upon the quality of patient care.

This concept has required a thorough re-evaluation of committee work in many hospitals and also the development of training programs for medical staffs in the technique of educational need assessment. CMA has sponsored a series of workshops in modern medical-audit techniques, conducted by Clement Brown, M.D., (developer of the Bicycle Approach) and his associates, one of whom is Daniel Fleisher (author of a chapter in the present volume).

It has become apparent that to reach the 600 hospitals in California it will be necessary to develop a California faculty to conduct the training workshops. Because less than 10 percent of patient care is provided within hospitals, the CMA has approved a pilot project in the evaluation of patient care in office practice based on the same concepts used in the development of the hospital accreditation program.

A companion program in the area of continuing medical education is the certification program for individual physicians. Now in its fourth year, it is the largest voluntary program being carried out by any state medical society. Through it, the physician reports annually on his own participation in a range of acceptable educational activities. Attainment of a CMA certificate in continuing medical education automatically qualifies the recipient for the AMA Recognition Award.

For information or materials, write Committee on Accreditation of Continuing Medical Education, California Medical Association, 693 Sutter St., San Francisco, Cal. 94102.

MAP FOR THE "WALK AROUND"

1. Determine needs.
2. Within priorities select a need.
3. Analyze need, define the problem.
4. If learning problem, diagnose cause and cure.
5. From alternatives select a corrective learning experience.
6. Plan and prepare learning experience.
7. Implement corrective learning experience.
8. *Assess outcome (evaluate).*
9. Determine next steps.

### *Step 8. To Assess Outcomes*
### *(To Evaluate)*

If continuing education/training of health manpower is an integral instrument of health care and health-care delivery, and if the parts of both health-care service and continuing education/training are to add up to wholes that are greater than the sums of their parts, then all parts and also the wholes must be subjected to assessment of outcomes, or evaluation.

This concept requires a view of evaluation more comprehensive and complex than one that restricts it merely to the assessment of educational outcomes. This concept calls attention to the fact that the word "program" is often used in at least two difference senses: (1) a general sense, meaning any prearranged plan or course of action proceedings, and (2) a specific sense, meaning some prearranged plan or course of education proceedings. Consequently, the concept calls attention to the fact that the word "evaluation" is often used in at least two different senses: (1) a "macro" sense, as used in PPBS (program, planning, budgeting system), and (2) a "micro" sense, as used in evaluation of educational programs, a specific instance of which is instructional evaluation.

The chapters in the present volume by Knox, Hutchison, Dickinson and Verner, Fleisher, Jason and Lessinger all deal extensively with various aspects of evaluation. This section on Step 8 in the Model of the Continuing Education Process – *assess outcome, evaluate* – will do two things. First, it will call attention to a few items of significant literature.* Second, it will present a diagram of a model of evaluation.

1. *Significant Literature*

a. One of the best descriptions, analyses and sets of instructions on educational evaluation is *Guidelines for Evaluation of Continuing Education Programs in Mental Health.*[61] (Its applicability is not limited to the field of mental health.) *Guidelines* includes three charts, each with vertical columns of specific questions to ask concerning principles; planning, data-gathering and decision-making; and evaluation procedures.

b. Probably the best set of articles and discussions on evaluation of continuing education/training in the context of health-care programs is *Proceedings: Regional Medical Programs, National Conference and Workshops on Evaluation, 1970.*[62] The first chapter, "An Approach to Evaluation for The Regional Medical Program," by Donald A. Schon, expresses the view that if a health-care program is to be greater than the sum of its parts – those specific activities that it supports and that support it – then the total program (in the macro sense) must be a primary object of assessment of outcomes, or evaluation. This leads to the other items of literature cited immediately below.

c. Sara M. Steele, University of Wisconsin-Extension, is a leading scholar and thinker in the field of evaluation in education, particularly adult education. One key publication is her *Contemporary Evaluation Models and Their Implications for Evaluating Programs for the Disadvantaged.*[53] This document, although commissioned by ERIC for use by persons working with "less advantaged" adults, would be useful to all continuing educators. Indeed, Steele's conception of "evaluation" is so

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*Although no work of Ralph W. Tyler is cited, his influence upon the field of evaluation should be acknowledged. That influence is fundamental and pervasive, from both his teaching and his writing, particularly *Basic Principles of Curriculum and Instruction*, Univ. of Chicago Press, Syllabus Division, Chicago, Ill. 1950, Syllabus for Education 305.

comprehensive that it would be useful also to managers (defined to include policy-makers, executives and administrators) as a managerial strategy. This publication is a survey and exposition of thinking about educational evaluation, historically and presently. The first part explores the nature of changing ideas about evaluation, presents an overview of some of the old and new models of evaluation, and makes suggestions about the kinds of evaluation models and evaluative research needed today. The longer section is an encyclopedia of references to more than 20 models.

d. At the American Education Research Association's 1973 convention, Steele presented a paper that opens new frontiers.[55] The trails she indicates all lead toward the integration of the macro and micro conceptions of both "programs" and "evaluation." The following four paragraphs reorganize and restate some of her points for the purpose of the present chapter. They are not a summary and few direct quotes are used because some of the language has been changed to give more general application.

(1) A new type of evaluation, *program evaluation,* is beginning to take shape in education literature, Steele says. It has not yet emerged as distinct and fully described phenomena. Considerable pressure was put on evaluation during the middle 1960's and the then prevailing concepts were found wanting; as a result more literature on evaluation has been produced and more different ideas about evaluation have been presented in the past eight years than in the previous fifty, in Steele's judgment. One factor is that the theory and concepts of operational research and managerial science have spread to education; for example, the concepts of *system* and *management of systems* are more widespread. *Instructional objectives* and *institutional goals* – the micro and macro levels – have emerged as specialized fields within the literature. How the two levels relate to each other is less clear. More attention is beginning to be paid to *hierarchies* and *networks of objectives and goals.* Program evaluation should be considered in a managerial context, as opposed to merely an instructional or research context.

(2) "As a start" Steele offers the following definitions: "Program evaluation is the process by which criteria and evidence are used in forming judgments about programs, alternative programs, and alternatives within programs and within the programming system, as a means of facilitating key decisions about education." "Program evaluation is a process by which evidence, criteria and judgment are used in managing resources and facilitating accurate and appropriate decision-making in areas of major importance about education."

(3) Program evaluation is not the same thing as instructional evaluation. Steele distinguishes, "Testing the pieces of the clock separately doesn't mean that the clock will run." Program evaluation focuses on macro-levels but is concerned also with how each unit fits with other

units on the same level and into larger units, how each step or stage leads to the next step or stage. Program evaluation is concerned with totals and wholes rather than with independent parts standing in isolation from each other. Therefore, programs should be judged on more than one set of criteria. Program evaluation is concerned with the extent to which the mission and institutional goals of the organization and of education are being met.

(4) Program evaluation is primarily concerned with improving decisions and improving education through facilitating better decisions, according to Steele. Evaluation that involves decision-making and the management of resources going beyond the decisions that control the specific instructor-learner interactions is a managerial rather than an instructional or research concept. Program evaluation, therefore, is a function of management and program management; it must be done within those roles.

This concept of program evaluation advances a line of thought that was started earlier in this chapter. First, it was observed that the analysis of the nature of a performance need, or deficit, is a point of intersection between the functions of management and education. Is its nature administrative, procedural, educational, or what? Then it was observed that the analysis of the nature of a learning need, or deficit, is also a point of intersection between the functions of management and education. From these observations the inference was drawn that managers and continuing educators must have close working arrangements; that managers must be knowledgeable about the strategies and procedures of continuing education/training; and that continuing educators must be knowledgeable about all managerial strategies and procedures. Now the further thesis is that evaluation is also a point of intersection between management and education, between managers and continuing educators.

### 2. *A Model for Evaluation*

The diagram depicted in the next Figure is intended to make visual a model of educational evaluation as an integral part of program evaluation. Two distinction of terms should be noted. One distinction is made, for the purposes of this chapter, between "goal" and "objective." "Goal," so used, refers to a long-range, specified state of accomplishment toward which programs are directed, without a specified time for achievement. "Objective," so used, refers to a certain state of measurable progress toward a goal during a specified period of time. The second distinction, taken from Scriven,[48] is between "formative" evaluation and "summative" evaluation. "Formative" evaluation refers to that made during the course of an educational program – feedback of results used to guide the remainder of the program. "Summative" evaluation refers to the summing up assessment of results at the conclusion of the program. Scriven's distinction is gaining currency in both educational and managerial language because it is useful. However it should be used with context and phase in mind. What is one and what is the other depends upon scale – scale of operations and scale of time in planning and decision-making. What is "summative" evaluation of a particular educational experience may be "formative" evaluation in a managerial program of which it is a part. What is "summative" evaluation at a stage just completed is "formative" evaluation for the next. As Steele said,[55] program evaluation focuses on macro-levels but is also "concerned with how each unit fits into a course, each course fits into a curriculum, each curriculum fits into the total program of a school, the program of each fits into the total of life-long education." She was writing specifically about formal education, but the thought is generalizable to the fields of continuing education and to health care, and particularly to continuing education for health manpower. These two distinctions, and the qualification concerning scale, should be kept in mind in reading Figure 4.

The purpose of this diagram of a model of evaluation is to give a way of looking at evaluation that clarifies (1) the systemic relationship of management program evaluation and education evaluation, and (2) the cyclical nature of the process. Indeed, when demonstrated performance needs, correctly diagnosed, become the basis for an educational program tailored to meet those needs, and when subsequent standards of performance are used to evaluate the effectiveness of the educational program (as in the Bicycle Approach), then the process is "bicyclical."

The model is much simplified, of course. It leaves out such components as the setting of priorities, the inventory of alternatives and resources, the choosing from alternatives. Moreover, the language of the diagram assumes a single goal, a single need and a single objective. The reason for simplification is to serve the purpose of clarifying the systemic relationship of program evaluation and education evaluation, and the cyclical nature of the process.

In Figure 4 the process of evaluation is indicated as beginning after a performance need has been identified, after the need has been diagnosed as a learning need, and after the nature of the learning need has been diagnosed. We will now consider the questions to be asked in evaluation in the sequence depicted by the diagram.

*How will we know what we have done?*

This question should be asked simultaneously with the question "What do we want to do?" – that is, as soon as the goals and the needs to reach the goals have been refined into the diagnosis of a learning need. Then come the setting and statement of objectives. An objective is a desired change in behavior before the learning experience that can be observed and, as well as possible, measured at stages during the learning experience and at its conclusion. As planning and preparation to reach the objectives are refined, so should planning and preparation for observing or measuring their achievement be refined. In sum, planning and preparing to evaluate what has been done should be an integral part of planning and preparing what to do. Thus before the learning experience is begun there is "feed-forward"

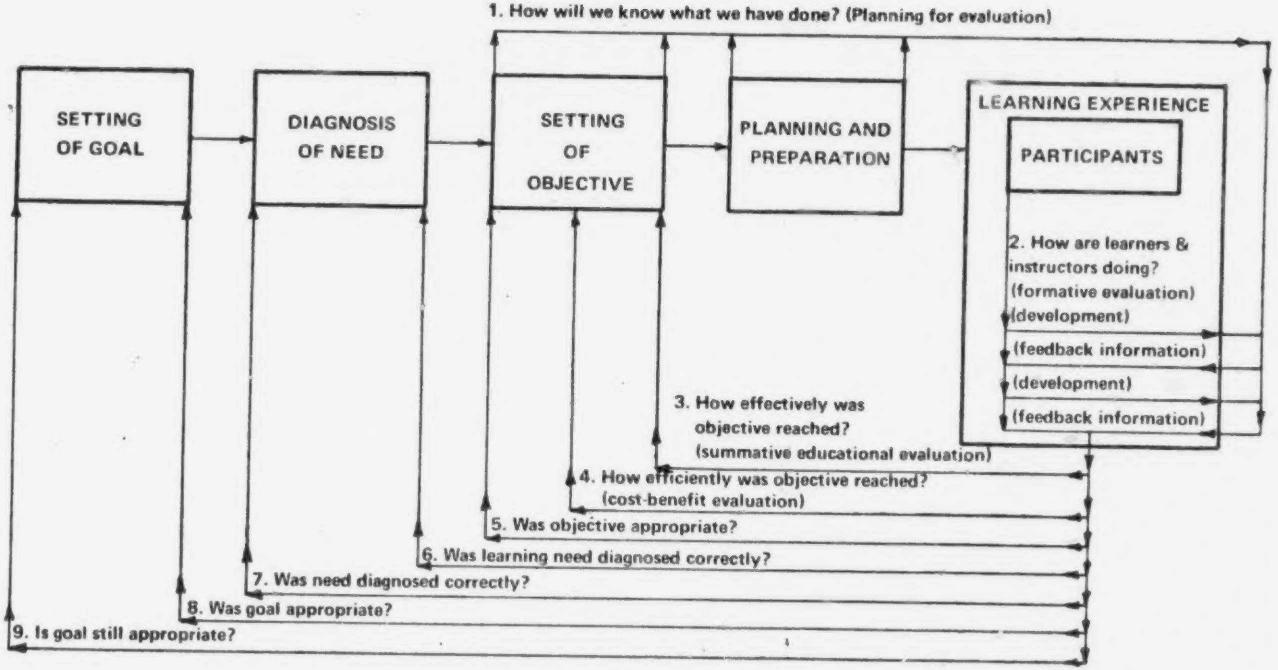
1. How will we know what we have done? (Planning for evaluation)
SETTING OF GOAL
DIAGNOSIS OF NEED
SETTING OF OBJECTIVE
PLANNING AND PREPARATION
LEARNING EXPERIENCE
PARTICIPANTS
2. How are learners & instructors doing? (formative evaluation)
(development)
(feedback information)
(development)
(feedback information)
3. How effectively was objective reached? (summative educational evaluation)
4. How efficiently was objective reached? (cost-benefit evaluation)
5. Was objective appropriate?
6. Was learning need diagnosed correctly?
7. Was need diagnosed correctly?
8. Was goal appropriate?
9. Is goal still appropriate?

FIGURE 4
Educational Program Evaluation as a Part of Management Program Evaluation
–The Kinds of Questions to Ask and
–The Kinds of Answers to Seek

information to give meaning to "feedback" information later. "Feedback" information about where one is has little meaning without benchmark information about where one was and a map to the desired destination.

As much as possible, the learner should take part in the entire process – the setting of goals, the determination and diagnosing of needs, the setting of objectives, the planning and preparation of the learning experience, the learning experience itself, and the evaluation, both formative and summative.

*How are we – the learners and instructor – doing?*

This question should be asked by each participant and the instructor periodically during the learning experience and answered by "feedback" information. "Feedback" is just noise unless it is used to guide subsequent decisions and actions. Receiving "feedback" information, including the results of tests of various kinds, and making "mid-course adjustments" accordingly are part of the learning experience.

*How effectively was the objective reached?* and *How efficiently was the objective reached?*

These are twin summative evaluative questions. "Effectively" asks "To what degree?" – that is, "with what benefits?" –particularly the intended benefits but unintended benefits as well. "Effectively" asks "How economically?" – that is, "at what costs?" The evaluation of the efficiency of educational programs is rarely made.

Precise evaluation requires an assessment of both efficiency and effectiveness, and to have meaning requires also a comparison of different approaches and/or similar programs. In the calculation of efficiency-effectiveness ratio lies the seed of cost-benefit analysis. Cost-benefit analysis has barely begun in education, and it is probably even less advanced in continuing education than it is in formal education. Cost-benefit analysis is, nevertheless, possible, even though in a primitive way, and to use and advance it becomes increasingly urgent because of the growing pressures in health-care provision and in continuing education of health manpower for accountability. (Such pressures are in other fields too, of course.) Lessinger, in his chapter in the present volume, presents both the difficulties and the possibilities of being able to explain what we intend to do with resources before they have been committed and what has resulted from their expenditure. He carefully includes in his title the phrase "An *Approach* to a Rational Scheme for Financing Continuing Education for Health Manpower." Attention is called also to two other articles – one by Klarman in the health-care field,[29] and the other by Steele in continuing education.[54]

*Was the objective appropriate to the need?*

To ask this question is to warn against some dangers in the drive to achieve quantification. The continuing educator should state objectives in terms of desired changes in behavior that can later be observed, and, if possible, measured, and he should observe and measure them at various stages later, where possible. But he should not limit educational objectives to those whose outcomes can be observed or quantified. It is more important that objectives be worthwhile and appropriate than that they be measurable and measured, when a choice between these criteria is necessary. This judgment should not be used as an excuse for laziness or sloppiness. Nevertheless, it is true that some of the most important and appropriate objectives may not be measurable or quantifiable – at least not in any precise way, and at least not with the present "state of the art." To try only what is quantifiable now is to shy away from the bold attacks on important objectives in new and imaginative ways. Of course, new and imaginative ways should be tried to measure or quantify efforts that cannot now be measured or quantified.

*Was the learning need diagnosed correctly?* and *Was the need diagnosed correctly?*

Perhaps the cause(s) and cure(s) of the learning need were diagnosed wrong. Or perhaps the cause(s) and cure(s) of the deficiencies of performance lay in managerial or administrative policy or procedure, or in some combination of managerial and educational factors. These matters are treated in other chapters of the present book by both Fleisher and Lessinger.

*Was the goal appropriate? Is the goal still appropriate?*

Goals – as used here, "long-range, specified states of accomplishment toward which programs are directed, without a specified time for achievement" – supposedly govern everything else. Insofar as the goals of a person or an institution or an organization do govern planning and decision-making and action, the more important it becomes that the goals be appropriate and remain appropriate. One of the dangers of "system analysis" is that everything may be subjected to scrutiny except the governing goals and the basic values and assumptions that underlie them. Goals should, therefore, be reviewed regularly – so that one may be reminded of them; may check whether they were appropriate, and, if so, whether they are still appropriate; may consider whether they should be adapted, or other goals added; or may determine whether more inclusive and long-range goals should be incorporated in the governing design.

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With the consideration of goals, we have closed the loop – leading back to determination of needs, diagnosis of the needs, and so on – and thus completed the cycle of this model of educational evaluation as a part of management program evaluation. We have also entered an area – indeed, a continent – of concerns that is too large for the present chapter and its Model of the Continuing Education Process. Yet those concerns are too important to ignore. Indeed, they are the social context for the present volume. That continent of concern is the goal of improving health care and health-care delivery for the American people. This goal has been stated in many ways, more or less grandoise, and more or less specific. One way of expression falling between the grandiose and the inadequately specific might be that the goal is to enable all citizens to have access to the highest possible quality of health care at the lowest possible cost. Other goals – or conditions of achieving this goal – are involved, of course, such as the preservation and strengthening of the American way of "pluralism" and "voluntarism." Two large Federal programs toward this goal, or these goals, have been the Regional Medical Programs and the Comprehensive Health Planning programs.

In the final chapter of the present volume, "Groping Toward a National Policy Involving Regional Efforts for Improved Health Service Delivery," William L. Blockstein documents this "groping." He discusses selected elements in the evolving national health strategy and relates them to regional approaches to improving health service, with continuing education as an integral component of those approaches. He gives an extensive national overview, describes some ongoing attempts at regionalized health-care programs, specifically the Regional Medical Programs and the Comprehensive Health Planning activities, and considers the emerging concepts of health maintenance organizations and area health education and service centers.

In addition to Blockstein's chapter, the following significant items of literature are recommended.

1. Bodenheimer[7] gives a history of regional attempts in the United States since 1932, makes a theoretical analysis of the concept of regionalization, and discusses the difficulties of regionalizing American health services. His article has 21 references.

2. The American Hospital Association held an Invitational Conference on Comprehensive Health Planning in Chicago on October 24-25, 1968. The papers, panel discussions and group reports of this conference[1] explored how the Comprehensive Health Planning Program, as it relates to hospitals, might be implemented most effectively, recognizing that hospitals were involved in only part of the total Comprehensive Health Planning programs and that health is only one of the many areas included in national comprehensive evaluation and planning.

3. Citizen participation is a major goal of many programs of health care. Burke[10] has made a critical analysis of this general goal and discovered basic conflicts between participatory democracy and professional expertise. He identifies and describes some of these conflicts. Then he suggests that some of the problems can be resolved by recognizing and adopting a strategy of participation specifically designed to fit the role and resources of the particular organization. He identifies five types of strategies, which he names "education-therapy, behavioral change, staff supplement, cooptation and community power."

4. Kissick[28] sees the health endeavor in the United States in a crisis that challenges the continuation of its pluralistic, independent, voluntary nature. Health care, although still predominantly a private-sector activity, is no longer

solely the private concern of the individual. He traces the evolution of the role of the government from the categorical-grants-in-aid programs of 1935 through the Regional Medical Programs and the Comprehensive Health Planning programs. He concludes that health-policy deliberations during 1970's, including the debates over National Health Insurance, "must focus on the modification of financing mechanisms and patterns of organization if society is to realize the most effective utilization of its health resources to provide health care" for its population.

5. Wagner[63] suggests a method of planning that will permit the integration of health programming into the total planning for community improvement, embracing the modern concepts of health that encompass the total wellbeing of the individual as he grows and matures. Wagner presents a kind of model – "the steps or schema of comprehensive health planning" – developed by the Bureau of Health Services of the Public Health Service, which he thinks embodies a "general approach which appears to be applicable in part, if not in total, to comprehensive health program planning at other levels, by either governmental or nongovernmental agencies and organizations."

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We have now completed Step 8 – evaluation – of the Model of the Continuing Education Process. We are ready for the last move, which is to decide "What now?"

MAP FOR THE "WALK AROUND"

1. Determine needs.
2. Within priorities select a need.
3. Analyze need, define the problem.
4. If learning problem, diagnose cause and cure.
5. From alternatives select a corrective learning experience.
6. Plan and prepare learning experience.
7. Implement corrective learning experience.
8. Assess outcome (evaluate).
9. *Determine next steps.*

### *Step 9. Determine Next Steps*

One set of decisions must be made if the evaluation, or assessment, of outcomes was unsatisfactory, and another set of decisions must be made if the evaluation of outcomes was satisfactory. But the kinds of decisions to be made may not be limited to these two sets, because the situation is not static. Perhaps the conditions have changed for one reason or another. The decision that might be required by changes in conditions, missions or goals cannot be considered here. The following sections in this part will deal with

(1) the kinds of decisions to be made if the evaluation of outcomes was unsatisfactory, (2) the kinds of decisions to be made if the evaluation of outcomes was satisfactory, and (3) the provisions to maintain the improved results achieved by the educational programs.

1. *What to do if the evaluation results were unsatisfactory?*

This question was considered in the section dealing with the Bicycle Approach. The alternatives are indicated on the diagram of the Model of the Continuing Education Process. Questions to consider are: (a) Is the deficiency in performance of sufficient importance that another effort should be made to remedy it? (b) If so, when should another effort be made? (c) If another attempt is to be made, what was the probable source of the failure? Was it in the analysis of the need and the definition of the problem? Perhaps the problem was not a learning but, say, an administrative problem. Or, if it was a learning need, perhaps it was diagnosed wrong. Or the wrong corrective measure was chosen. Or, if the correct measure was chosen, perhaps the learning experience was improperly planned or prepared, or improperly implemented.

2. *What to do if the evaluation results were satisfactory?*

The course indicated on the diagram of the Model of the Continuing Education process is to select another need within the priorities of determined needs and to start the process of meeting it. This is the logical next step. But, again, the qualification should be kept in mind that the situation is dynamic. There may have been changes. The possibilities of changes cannot be considered here, so let us assume an established priority of needs.

Figure 5 is intended to make visual a continuous movement toward a long-range goal through intermediate priority objectives. The vertical columns indicate sequential stages in time.

In reading Figure 5 the following definitions, as they are used for the purpose of this chapter, should be kept in mind.

First, is the distinction between a "goal," as referring to a long-range state of accomplishment which does not fix a time for its achievement, and an "objective," as referring to a state of measured and specific kind of progress during a specified period of time.

Second are the two senses in which "program" is used – managerial programs, and educational programs. According to the application of the scheme depicted in Figure 5, either or both senses may be appropriate.

Third, the word "monitoring" should be noted. The intended sense can be generalized from Fleisher's specific explanation in his chapter in the present volume. The point is not that any particular method is applicable, or even adaptable to all situations, but the specific instance does give concreteness to a function which is essential and for which appropriate ways can be adapted or invented.

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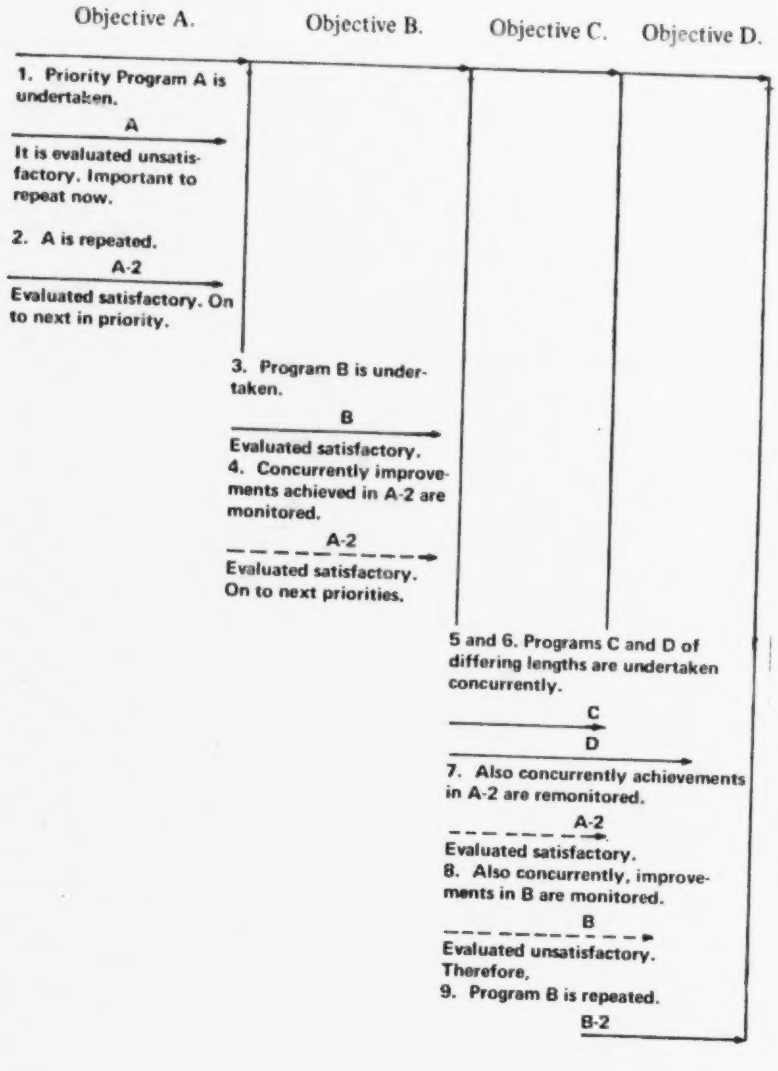
Objective A.
Objective B.
Objective C.
Objective D.
1. Priority Program A is undertaken.
A
It is evaluated unsatisfactory. Important to repeat now.
2. A is repeated.
A-2
Evaluated satisfactory. On to next in priority.
3. Program B is undertaken.
B
Evaluated satisfactory.
4. Concurrently improvements achieved in A-2 are monitored.
A-2
Evaluated satisfactory. On to next priorities.
5 and 6. Programs C and D of differing lengths are undertaken concurrently.
C
D
7. Also concurrently achievements in A-2 are remonitored.
A-2
Evaluated satisfactory.
8. Also concurrently, improvements in B are monitored.
B
Evaluated unsatisfactory. Therefore,
9. Program B is repeated.
B-2

Figure 5: Systematic Movement Toward a Goal Through a Priority of Objectives (Vertical columns indicate sequential stages in time. Solid lines indicate educational programs. Dotted lines indicate monitoring of results of previous educational programs.)

Monitoring is a method of providing for the maintenance of improved results – a function pointed to by an arrow leading out of Step 9, *Next Steps,* in the Model of the Continuing Education Process.

Actually the maintenance of improved performance (the desired changes in behavior that have been achieved) is only one stage in achieving planned change. It is only one of three and, moreover, it is the final one. Schein[47] calls these three stages "unfreezing," "changing" and "refreezing."

Here again we have entered an area both too large to treat in the present chapter and too important to ignore. Once again the compromise is to call attention to some significant literature.

1. The most specifically useful is Schein's volume just cited. His eighth chapter, titled "A Model of the Process of Planned Change," expounds in detail the concept and the schema that will be sketched below. (Schein says the model "is an extension of the dynamic-change model developed by Kurt Lewin in the 1940s.")

> . . . Part of any planned change model must . . . be a model of how individuals in a social system *learn* and thereby transform the social system. This learning has to occur in a situation in which, by virtue of their membership in the social system, individuals already have ways of thinking, feeling, and acting to which they are committed and which makes sense to them. Such sense may be based on rational diagnosis or may derive from a set of rationalizations for emotionally based traditions or habits. In either case, however, the change agent must assume that the members of the system will be committed to their present ways of operating and will, therefore, resist learning something new. As a consequence, the *essence* of a planned change process is the *unlearning* of present ways of doing things. It is in this unlearning process that most of the difficulties of planned change arise. (p. 75)

In Schein's model Stage 1 is "unfreezing" – creating the motivation to change; Stage 2 is "changing" – developing new beliefs, attitudes, values, and behavior patterns on the basis of new information obtained and cognitive redefinition; Stage 3 is "refreezing" – stabilizing and integrating new beliefs, attitudes, values and behavior patterns into the rest of the system. Immediately after a figure that lists the "mechanisms" for each of these stages, Schein remarks, "It should be noted that if a change program is to be successful, it must pay particular attention to stages 1 and 3."

2. One volume by Havelock[19] is a report of a project to understand and improve the process of the dissemination and utilization of knowledge in all fields of practice. Another by Havelock is a guide to the process of innovation, a "how-to-do-it" reference book.[20] Although explicitly written for formal education, it has applicability to other institutional fields. It includes an annotated bibliography, also published separately.[21]

3. The best anthology of readings in the use of the knowledge of the behavioral sciences – from psychology to sociology – to plan for and realize

social change was compiled by Bennis, Benne and Chin, with introductory and connecting materials written by them and including some of their own other writings.[4] The readings range from the highly theoretical to the sharply practical. They give much attention to the dynamics of small groups and to the "force-field analysis" of Kurt Lewin, who strongly influenced all three.

4. Rogers and Shoemaker's volume[46] is the only complete encyclopedia of research into the diffusion of social innovations. It is based on about 1,500 publications of empirical research, including many investigations in less developed countries. It contributes to an understanding of the many steps involved in human communication about change, particularly where the mass media are involved.*

The volume cited above presents a "model of the innovation-decision process" and it has a long chapter on "adopter categories." The authors' categories of "adopter types" of individuals, and their tag descriptive adjectives are (1) innovators: venturesome; (2) early adopters: respectable; (3) early majority: deliberate; (4) late majority: skeptical; and (5) laggards: traditional. The subjects of the "innovative-decision process" and types of persons with respect to the adoption of innovations lead to the next two recommended items.

5. Becker's article[3] summarizes some major results of an extensive research project that traced the patterns by which public health programs diffused among health departments within Michigan, Illinois and New York. The objective was to identify factors that facilitated or inhibited adoption of new programs. The generalizations stated in Rogers and Shoemaker's book (cited immediately above) were confirmed. Becker concludes by asking, What can be done to hasten initial adoption of innovation by pioneers? He suggests answers:

> (1) One crucial step is to ensure that opinion leaders are exposed early to sources of information and influence containing the information necessary to innovate – sources demonstrated by this study to be valued by opinion leaders . . . (2) A second important approach toward speeding up the initial adoption of innovations by pioneers would be to increase the prestige value of proposed innovations and to reduce any risks associated with adopting them . . . (3) It would also seem possible to reduce delays between the adoption of an innovation by a pioneer, by opinion leaders, and by other members of the communication network. This could be accomplished by

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*Rogers has put all the publications of research on the diffusion of innovations into an information retrieval system and he incorporates new publications as they arrive. One of the ways the information is organized is by generalizations. A generalization is a statement of relationship between concepts. This computerization makes it possible to retrieve all the references to a certain generalization, organized according to whether they support or do not support the generalization. For more information about the computerized data, write Dr. Everett M. Rogers, Diffusion Documents Center, Michigan State University, East Lansing, Mich. 48823.

ensuring that all members of the communication network become informed about the action of the pioneer as soon as possible.

6. Mention has already been made of the study of Michigan physicians directed by Floyd Mann.[37] The second phase of the study was designed to identify the more active and influential physicians in the formal and informal information exchange systems that exist within medical staffs and to learn what distinguished these men and women from their colleagues.

> The final group of interest is composed of criterion physicians, doctors' doctors and informal/formal consultants. Young, highly motivated, confident of their ability, already far advanced professionally, these physicians appear to be important not because more educational effort needs to be directed their way but because they have a great deal of potential as educators. Indeed, one might say that they are the key to improving the educational picture in Michigan. They are in touch with the best sources of medical information and they are already serving in some capacity as on-the-spot educators of their colleagues. If their skills as educators can be significantly improved, and if they can turn more of their attention to the educational needs of the generalist, they will provide that unique resource that could lead to dramatic improvement in the quality of education at the point where most physicians want it – in their immediate environment.

## PART THREE: CONTEXT

The only part of the Model for the Continuing Education Process that remains to be treated is the one indicated in Figure 3 by the surrounding box labeled CONTEXT. There are two aspects of context denoted. One is the context in which the learning experiences take place. The other is the social context (geographic, demographic, political, economic, technological and organizational) within which decisions are made and actions taken – goals set, needs identified, alternatives considered, resources inventoried, choices made, resources committed, and so on.

1. *Context as the setting of the learning experience*

For the purpose of relating continuing education to actual performance needs, the learning experience should be as close to practice as possible, ideally within practice. There are at least three reasons why this is advisable.

First, as a person matures, his readiness to learn becomes increasingly oriented to developmental tasks and social roles.

Second, the function of a professional person is to make decisions and to act. A professional person must decide and act – always with incomplete knowledge, with less than perfect skills and with a probability of error – but always he must decide and act. Continuing education should set priorities to the practitioner's learning needs according to the probability of use. The attitudes, skills and knowledge that the practitioner is certain to use are those that help him solve the problems he faces.

The arena where decisions are made, actions taken and the consequences lived with is the best context for learning and maintaining these attitudes, skills and knowledge.

Third, in continuing professional education the strongest motivation for behavioral change is the need to increase competence and improve performance. The environment for learning and for fostering the "growing need to know" is better in situations where competence is called for and must be answered: the context of practice.

2. *Context as the framework for decision-making*

The American people seem to be moving toward the formulation of a national goal that might be stated in some such terms as enabling all citizens to have access to the highest possible quality of health care at the lowest possible cost, and to do so by strengthening the American way of "pluralism" and "voluntarism." One of the purposes of the Regional Medical Program and the Comprehensive Health Planning programs was to approach this goal in this way – through regional voluntary, cooperative efforts. The need remains for expanding the frameworks within which decisions are made, decisions about goals, alternatives, the commitment of resources, objectives, and programming. The need remains for enlarging the boundaries of what alternatives are possible and what resources are available through cooperative planning and use of resources. These and other such needs remain and increase. The chapters in this volume by Blockstein and Knox complement one another. Blockstein describes the "gropings" toward a national policy through regional efforts, in which continuing education is an essential instrument. Knox defines and illustrates ways in which the continuing educator can play a "linkage-agent" role.

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We have now completed the "walk around" the process depicted in the Model for Continuing Education for Health Manpower. This chapter will conclude with attention to some problems that affect continuing education for health manpower.

## PART FOUR: THREE PROBLEMS

1. *How can educational planning to meet health manpower requirements be improved by using techniques of determining what those requirements are and are likely to be?*

Ann Lewis' chapter in the present volume, "The Use of Analytical Techniques to Determine Health Manpower Requirements for Educational Planning," is aimed squarely at this problem. It provides stable reference points for educators in developing the training needed by any health-manpower workers. It outlines the kinds of information available and explains the available tools, and it suggests routes to the information needed to determine what knowledges and skills must be taught.

In this area of concern, important movements are under way to improve the planning of education in nursing and related fields, particularly continuing education, so that it will be more responsive to changing requirements. These movements were started by the 1970 recommendations of the National Commission for the Study of Nursing and Nursing Education.[30] Two recommendations were that each state establish a state-wide master planning committee for nursing education, and also a statewide joint practice commission. Another related recommendation was that a "national Joint Practice Commission, with state counterpart committees, be established between Medicine and Nursing to discuss and make recommendations concerning the congruent roles of the physician and nurse in providing quality health care, with particular attention to: the rise of the nurse clinician; the introduction of the physician's assistant; the increased activity of other professions and para-professions in areas long assumed to be the concern solely of the physician and/or the nurse."

In April 1971 the National Commission on Nursing and Nursing Education designated nine states for initial, intensive effort to establish statewide planning committees: California, Georgia, Illinois, Kansas, Maine, North Carolina, Pennsylvania, Texas and Wyoming. In September 1971 the Boards of Directors of both the American Nurses Association and the American Medical Association took affirmative action with regard to the establishment of the National Joint Practice Commission, and the first meeting of the NJPC took place in St. Louis, Mo., in January 1972.[31]

For materials or further information, particularly on the fast-developing action on these recommendations, write Dr. Jerome P. Lysaught, Director, National Commission for the Study of Nursing and Nursing Education, 208 Westfall Road, Rochester, N.Y. 14620.

2. *How should the many mechanisms of social regulation of health manpower – accreditation, licensure, certification etc. – be changed so as to contribute to improved health-care delivery while helping to assure quality of health care?*

"Social Regulation of Health Manpower" – the title of Ruth Roemer's chapter in this book – is an accurate description of its subject. It gives an overview of social regulation and describes seven kinds. Then it discusses each of the seven kinds of regulation in terms of the current picture, problems and issues, and proposed strategies for improvement.

Several relevant developments in this area are noted below.

a. Follow-up on the SASHEP Report

The Council on Medical Education of the American Medical Association proposed that a cooperative study of health educational accreditation be undertaken. This proposal resulted in the Study of Accreditation of Selected Health Education Programs, commonly referred to as SASHEP. Sponsored by the Association of Schools of Allied Health Professions, the Council on Medical Education of the American Medical Association, and the National Commission on Accrediting, the study was supported by a grant from The Commonwealth Fund. Volume I of the *Staff Working Papers* was published in October 1971[57] and Volume II in February 1972.[58] The *Commission Report* was released in May 1972.[59] Its main recommendation was the establishment of an independent organization – the Council on Accreditation for Allied Health Education – to "sponsor, coordinate, and supervise the accreditation of the selected allied health education programs."

The SASHEP Report called for discussion and implementation meetings. The three cosponsors of the project convened a meeting in Washington, D.C., in November 1972. Over 125 organizations were represented by more than 250 participants. A summary report of the meeting is available from SASHEP offices. The responses were too varied and too tentative to be summarized, but it is plain that consequences will follow from the SASHEP Report and recommendations.

For materials and further information, write Study of Accreditation of Selected Health Education Programs, Suite 300, One Dupont Circle, Washington, D.C. 20036.

b. Hospital Credentialing Experiment

In 1972 Rush Presbyterian-St. Luke's Medical Center, Chicago, received a grant to finance Phase I, the development of a demonstration project in Illinois of "credentialing health personnel by licensed hospitals as a supplement or alternative to existing forms of licensing, accrediting or registering of health personnel in dependent roles." The objective is to learn whether the quality of hospital patient care can be better assured when each hospital annually reviews and credentials its own allied health personnel. Can the hospital credential all members of its personnel just as it now evaluates the credentials and defines the privileges of its medical staff? Phase II, the actual field study and evaluation, would be undertaken after a year, with a second grant contingent upon the development of an acceptable plan. Project sponsors are the board of trustees of the Illinois Hospital Association, the Illinois Nurses Association and the Illinois State Medical Society. The address of the Illinois Hospital Association is 840 N. Lake Shore Dr., Chicago, Ill. 60611.

c. Equivalency and Proficiency Testing

The use of tests to equate knowledge, experience and skill however acquired with prescribed levels of formal training (equivalency testing) and to match people with jobs on the basis of measurable ability to perform them (proficiency testing) is receiving increasing attention by those concerned with manpower shortages in health-related occupations. The place where most information is available and from which most of the impetus is coming is the DHEW Division of Allied Health Manpower. The best single document surveying testing programs in allied health and other fields existing in 1971 is *Equivalency and Proficiency Testing*,[60] which has an annotated bibliography of 108 items. Some more recent developments are: (1) The Division of Allied Health Manpower in 1972 awarded three contracts to the American Association for Inhalation Therapy, the American Occupational Therapy Association and the Educational Testing Service to develop new approaches to qualifying personnel for careers in inhalation therapy, occupational therapy and radiologic technology; (2) the College-Level Examination Program (CLEP) in early 1973 announced four new CLEP subject-matter examinations related to the field of medical technology – clinical chemistry, hematology, immunohematology and microbiology; (3) in 1972 the American Medical Association established a subcommittee on Proficiency and Equivalency Examinations.

3. *How can continuing educators of health manpower be better prepared?*

Unfortunately, on this problem there is nothing comparable to Lewis' and Roemer's chapters on the other two problems – nothing either in this book or anywhere else. However, several significant activities are worth noting.

**a. University of British Columbia program**

The Department of Adult Education and Division of Continuing Education in the Health Sciences has established a program for the professional preparation of specialists in continuing education in the health sciences. Funded by the Kellogg Foundation in 1971, by 1973 the program had graduated its first three persons with master's degrees, had held an international conference, developed four bibliographies, and had begun a mobile resource instruction center.

The first Kellogg Invitational Conference on Inter-professional Continuing Education in the Health Sciences was held at the University of British Columbia in June 1972. Proceedings are available (W.K. Kellogg Foundation Project Report No. 2). A second conference, this one on self-directed learning in the health sciences, was planned for June 1973.

June Nakamoto, R.N., and Coolie Verner, Professor of Adult Education, have compiled four bibliographies: "Continuing Education in Medicine" (W.K. Kellogg Foundation Project Report No. 3); "Continuing Education in Nursing" (W.K. Kellogg Foundation Project Report No. 4); "Continuing Education in Dentistry" (W.K. Kellogg Foundation Project Report No. 5); and "Continuing Education in Pharmacy" (W.K. Kellogg Foundation Project Report No. 6). These four bibliographies have been published together in one volume by ERIC Clearinghouse on Adult Education.[39]

For more information, write Professor Coolie Verner, Adult Education Research Centre, University of British Columbia, Vancouver, B.C.

**b. New England Regional Resource Center**

A four-year program – from February 1971 through February 1975 – is under way in New England for the training of regional health-care personnel and for the improvement of regional health care. It is jointly supported and conducted by the New England Hospital Assembly (NEHA) and the New EnglandCenter for Continuing Education. NEHA represents 416 hospitals in New England, and the New England Center is a cooperative facility of the region's six state universities.

The program goals are (1) to develop a "regional resource center" based at the New England Center that will provide audiovisual materials, consultants and educational programs, and other material for use by health-care facilities throughout the region; (2) to train instructors and educational administrators in the health-care field; (3) to develop research and demonstration models – "working models" – which can be adapted by the region's health-care facilities.

For further information, write Richard G. Allen, Director of Education, New England Hospital Assembly, Office of Health Care Education, University of New Hampshire, Durham, N.H. 03824

**c. American Society for Hospital Education and Training**

An affiliate of the American Hospital Association since 1971, the American Society for Hospital Education and Training is a professional society of persons who are responsible for the training and continuing education of today's work force in the health-care field. It encourages its members to design and conduct continuing education and training programs in all types of health-care institutions, allied associations, government agencies and educational institutions. Annual membership dues are $22.50. The address of ASHET is 840 N. Lake Shore Dr., Chicago, Ill. 60611.

## SUMMARY AND CONCLUSION

The intent of this chapter has been to present a way of looking at continuing education for health manpower that may improve the quality of decision-making and performance at all the stages – from the determination of need through the "summative" evaluation, which should be a "formative" evaluation to guide decisions concerning next steps in a never-ending cycle. The chapter has offered a methodology that relates the solution of learning problems to the solution of problems of health-care service. The concept of the methodology is to view continuing education as a problem-solving process. The schema of the methodology is a sequence of steps for the management of continuous learning.

That schema was offered in a model. The basis of the model is the scientific problem-solving process, depicted in Figure 1. Then an elaboration of this basic process was presented – the Bicycle process, depicted in Figure

2. The model depicted in Figure 2 has the advantage of concreteness for physicians in hospitals. It may have the disadvantage (from the point of view of the purposes of this book) of being hard to apply in a wider range of situations to a wider range of health manpower. Therefore, a more general, "analytic," form was presented in Figure 3 – a Model of the Continuing Education Process.

The model of Figure 3 may have the disadvantage of being too general to apply in the many specific circumstances that are involved in the vast range of health care and to the multitude of different kinds of health manpower. Consequently, as the process was expounded, step by step, many references to literature were made and many examples were cited from current practice.

The section on "evaluation" includes Figure 4, which depicts "program evaluation" – a concept that includes both managerial programs and educational programs. This concept and model are fully in harmony with the Bicycle Approach.

The section on "Next Steps" includes Figure 5 – a model of systematic movement toward a goal through a priority of objectives.

Throughout the step-by-step exposition of the process of continuing education (depicted in Figure 3) the need was stressed for "linkages" into larger contexts, both of conception and of implementation, particularly in regionalized patterns of cooperative planning and use of resources.

After the "walk around" the process was completed, three problems were considered: (1) How can educational planning to meet health manpower requirements be improved by using techniques of determining what those requirements are and are likely to be? (2) How should the many mechanisms of social regulation of health manpower be changed so as to contribute to improved health-care delivery while helping to assure quality of health care? (3) How can continuing educators of health manpower be better prepared?

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Some disclaimers are in order. The intent was nowhere to present continuing education as a panacea; however, as Dorothy Hutchison quotes from Cyril Houle, "While continuing education will not cure all the problems of the professions, without it no cure is possible." Similarly, the intent was nowhere to present the problem-solving process as capable of solving all problems (for example, no ways seem to be known to instill and foster a sense of responsibility and a capacity for compassion). However, one is more likely to solve most problems if one goes about the solution in a systematic way.

A final disclaimer is that the analysis and model that have been presented in this chapter have the limitations of their focus. The focus was on continuing education as a problem-solving process. The model, therefore, is what George E. Miller calls a "process-oriented" model, in contrast to a "categorical subject-matter" model. This focus is not to reject the "categorical subject-matter" model in itself but only when it is used in accordance with the purposes and interests of the instructor, rather than in accordance with those of the learner. When the learner judges that he needs theory and knowledge organized according to subject-matter disciplines, then the "categorical subject-matter" model is appropriate. As Knox says, the self-directed learner needs to be able to move back and forth between the domain of theory and knowledge organized as disciplines and the domain of theory and knowledge applied in practice.

The focus of this chapter and its model is on continuing education as an instrument to improve health care. That focus leaves out other objectives. Among the vital objectives it leaves out are continuing education for the enrichment of health careers and continuing education for self-fulfillment and self-realization. The model presented continuing education as a problem-solving process, but continuing education is more than a problem-solving process.

The focus of this chapter on "health manpower" leaves out major attention to the "self" as an end in its own right and to self-education. (The "self" can be defined as the "aware" part of a person.) This omission was a division of labor, not a lack of concern.

Only the self can be expected to have a concern for oneself as a whole person, a value and an end in one's own right. We cannot expect "health manpower to treat the patient as a whole person" unless each member of health manpower has a concern for himself as a whole person. Only the self can be expected to have a concern for other persons in widening circles of communities.

Other people can help "educate" a person, but only the self can learn.

This remark leads to the concept of self-education. Self-education is the "I" educating the "me," or, rather, the many "me's." A person can be aware of himself in many aspects and roles. as a general human being, and also as a participant in many kinds of situations – as parent, as friend, as citizen, as a member of various groups and organizations and communities, and, of course, as a worker. Self-education can be directed to realize improvements in any of such aspects, or roles. Such aspects, or roles, are not separate, of course. The characteristic of what we call a "well integrated person" is that all his aspects, or roles, support one another harmoniously. A person may correctly perceive that at times the best way to improve himself in a particular role, particularly a professional role, is to improve himself as a general human being – a person.

The fact that only a person himself can learn and the fact that we are all learning something all the time do not mean that self-education is random learning in isolation. Self-education is systematic, managed learning. The principles and procedures of effective self-education, properly adapted, are basically the same as the principles and procedures of the effective education of others.

These remarks on the vital importance of the person and of self-education are intended to acknowledge some of the limitations of this chapter. They are intended also to introduce the next chapter in this book; in "Life-Long Self-Directed Education," Alan Knox presents a model of a "mentor role" that is applicable equally to the mentor of the education of one's self and to the mentor of the education of others. His model should be considered a supplement to the one presented in this chapter. Knox' model, while appropriate for everybody, is especially appropriate for persons upon whom this first chapter does not focus – the leaders, the "influentials," the "innovators," the "early adopters," the "criterion" colleagues – call them what you wish. They can be identified. To generalize the language in the concluding paragraph of the study reported in *Michigan Medicine,*[37] they are the key to improving continuing education of health manpower. They are already serving in some capacity as on-the-spot educators of their colleagues. If their skills as educators can be significantly improved, and if they can turn more of their attention to the educational needs of others, they will provide that unique resource that could lead to dramatic improvement in the quality of continuing education at the point where most health-care workers want it – their immediate environment.

The concepts of what is "education" and who are "educators" are expanding, tumbling down long-held barriers that separated professions, roles, settings, contents, methods, modes, techniques, and devices; mixing up fine definitions between "teacher" and "student", between the "educator of others" and the "self-educator"; between "solo," "group" and "institution-sponsored" programs.

There are parallel developments in the field of health care and in the field of education. The concept of "health" is widening and deepening. The concept of "education" is widening and deepening. The realization is spreading that no "health-care system," however large, can make passive individuals healthy. The realization is spreading that no "educational system," however large, can make passive individuals educated. Increasing emphasis is being put upon self-directed process – upon efforts to get people to assume responsibility for their own well-being and development: physical, mental, emotional and all other aspects that are integral in a person.

To get people to assume responsibility for their own well-being and development means to help them learn how to do so – learn how to do many specific things in many specific roles and situations, and as a person to learn to learn.

Consequently professionalism in the field of health care is assuming a larger educational dimension, and professionalism in the field of education is assuming a larger self-directed dimension. These two enlarging dimensions merge in the field of continuing education of health manpower.

# APPENDIX A

## University Extension Programs in Consumer Health

The greatest untapped health manpower resource in the United States is the individual consumer. What is needed is an informed and "activated" citizenry that can take its own initiative in personal health care and in the approaching and utilizing of the health-care system. An important and promising avenue for encouraging this kind of active response is through a broad program of consumer health education.

State universities and land grant colleges are unique in their commitment to public educational services. University extension, both cooperative and general, has demonstrated its effectiveness in some areas which contribute to better health – including nutrition, sanitation, homemaking and pest control. Extension has not been involved directly in issues of health-care delivery or access to the system because it was deemed that this was the exclusive domain of the formal health-care delivery systems.

However, it has become clear that extension personnel and the extension movement generally have been interested in health for some time. On April 2, 1971, the National Association of State Universities and Land-Grant Colleges was host to a national meeting to explore the involvement of extension in health education. The meeting was underwritten by the Health Services and Mental Health Administration, which announced that it would fund four demonstration projects, and which contracted with the Extension of the University of Wisconsin to prepare a document for the meeting.

The document, titled "Interim Report of Project-1971: Planning Proposal for Consumer Health Education," was transmitted on February 26, 1971, and distributed in advance of the meeting. A second version titled "Final Report of Project-1971: Planning Proposal for Consumer Health Education," was transmitted to HSMHA June 30, 1971. The first version includes a 24-item bibliography "Suggested Reading List for Applications." The second includes an 85-item bibliography, which has a "foreign publications" section with items on Denmark, England, India, France and Sweden, and a World Health Organization section with citations of 25 items.

At the April 2, 1971 meeting there were 76 persons representing 50 institutions and agencies from 30 states. Subsequently 23 extension-sponsored or extension-linked demonstration proposals were submitted to the Health Services Mental Health Administration. Four were funded – one each in Missouri, Virginia, Maryland and Wisconsin. All have similar objectives: (1) greater concern for personal health; (2) positive steps to prevent illness occurrence; to prevent progression of minor illnesses; and to prevent dependency upon rehabilitation following catastrophic illness; (3) a better understanding of the changing health-delivery system and how to obtain access to it most effectively and efficiently; and (4) a better understanding of what one may accomplish by self-help without, or prior to, calling on the formal health-care delivery system.

Since each of these projects began in March of 1972, results and evaluation are not yet in. Moreover, it seemed at the end of 1972 that HSMHA would not refund these projects or extend the experiments, at least at the present time.

Nevertheless, the need for public education programs in self-care and the opportunity to conduct them through extension systems, both cooperative and general, seem so obvious that these four projects are worth attention.

The names and addresses of the persons in charge of the four demonstration projects follow.

1. University of Maryland, College Park, Md. Title: Consumer Health Education Demonstration; Co-Directors – George Lentz, M.D., Director, Community Pediatric Center, School of Medicine, University of Maryland, Baltimore, Md. 21201; and Virginia Li Wang, Ph.S., M.P.H., Health Education Specialist, Cooperative Extension Service, University of Maryland, College Park, Md. 20742. Letters should be sent to Dr. Wang.

2. University of Missouri – Columbia, Kansas City, Rolla, St. Louis. Title: Consumer Health Information Program. Area 1 – a rural area (Dent, Iron and Reynolds counties); Area 2 – a region combining rural and urban elements (Henry, Johnson, Lafayette and Pettis counties); and Area 3 – an urban area (the Model Cities section of Kansas City). For overall information, contact William A. Gates, Sr., Assistant Program Director, University-Wide Extension, University of Missouri, Lewis Hall, Columbia, Mo. 65201.

3. Virginia: Virginia Polytechnic Institute and State University, Blacksburg, Va. 24061; coordinately subscribing, University of Virginia, Charlottesville, Va. 22902 and Commonwealth of Virginia Department of Health, Richmond, Va. 23219. Title: Virginia Consumer Health Education Demonstration. For information write to Mr. M. Howard Bryant, Director, Department of Urban Affairs, P.O. Box 3697, University Station, Charlottesville, Va. 22903.

4. Wisconsin: University Extension, University of Wisconsin. Title: Consumer Health Education. Write William L. Blockstein, Ph.D., Chairman, Health Science Unit, University Extension, University of Wisconsin, 610 Langdon St., Madison, Wis. 35706.

## APPENDIX B

### Continuing Education Activities of the American Society of Clinical Pathologists

The educational role of the Society underwent explosive expansion with the formation of the ASCP Commission on Continuing Education in 1956. Then the membership, about 2,500, approved the concept of a formal program of continuing education. The program was officially launched the next January. A Commissioner of Continuing Education was appointed to collaborate with the ASCP Scientific Councils in the planning and implementation of seminars and other educational programs, and to prepare, publish and disseminate educational materials to acquaint medical laboratory personnel with scientific advances in the field of laboratory medicine.

The present Commission of Continuing Education (CCE) programs and services represent the voluntary contributions of nine of the Society's Scientific Councils. The duties of the Commission are the development of policy, coordination of Council activities, and the implementation of educational projects. The Commission's activities are divided into three categories: Educational Programs, Educational Materials, and Administrative Affairs, each under the direction of a Deputy Commissioner. In addition, about 20 ASCP Fellows and Affiliate Members serve as directors of specific projects. Annually more than 350 other members serve voluntarily in the production of educational programs and materials. The Commission is supported by an administrative staff composed of a full-time Commissioner of Continuing Education, a Director and Deputy Director of Continuing Education Services, a team of Technical Project Managers, and other senior administrative personnel and specialists. Thus, approximately 500 volunteer and staff members are required to maintain the day-to-day activities and special projects of the Commission.

## THE ASCP EDUCATIONAL CENTER

In June 1971 the Educational Center was dedicated. It is a unique, privately financed facility for the development and conduct of a comprehensive program of continuing education service for all medical laboratory personnel. It provides year-round workshop opportunities to develop, utilize and distribute the latest educational tools of communication. It has an auditorium, specially constructed teaching and support laboratories, a library and resource center for individual study, a full-scale printing plant, an artists' studio and a television studio.

All the educational programs of the ASCP Commission on Continuing Education are accredited by the AMA Council on Medical Education. The Society's current educational activities can be classified in six categories – National and Regional Workshop Programs, Home Study Programs, Audiovisual Materials, Publications, Special Projects, and Research and Development Projects.

1. *National and Regional Workshop Programs*

Ordinarily more than 100 Commission on Continuing Education (CCE) Council-sponsored workshops and applied seminars are offered at the Society's spring and fall meetings. In 1971 there were 187 workshops with 8,475 paid registrants.

## Annual Anatomic Pathology Slide Seminar

Several months before the fall meeting, registrants receive about 25 microscopic slides for review and submission of diagnoses. During the seminar each case is discussed by a panel of experts and the tabulation of the registrants' diagnoses is disclosed along with the correct diagnoses. The Seminar Proceedings, a verbatim transcript, are distributed to the registrants a few months following the presentation.

## ASCP Educational Center Programs

In 1971 the Society inaugurated a year-round series of four-day or five-day workshops, conducted in the new ASCP Educational Center. These workshops differ from the spring and fall meeting workshops in that the facilities permit presentation of much more sophisticated workshops.

## Tutorial Laboratory Programs

The Tutorial Laboratory Program was established early as a year-round, nationwide supplement to the oversubscribed national meeting workshops. The Tutorials are directed by outstanding authorities in their particular field using their own laboratory facilities. They combine practical laboratory exercises with didactic presentations and, depending on the topic, vary in length from one to five or more days.

## Regional Workshops

A recent addition, these workshops are year-round presentations of national-meeting type topics held in conjunction with State Society Medical Meetings. The Regional Workshops are conducted in cooperation with the local faculties, and CCE materials and publications are made available for the programs.

## Medical Technology Training Institutes

A Health Services Grant from the Division of Allied Health Manpower of the NIH has recently (1972) been awarded the ASCP Commission on Continuing Education for the development of regional Training Institutes for 2,000 medical laboratory instructors. The two-and-one-half-day Institutes are devoted to theory, techniques, application and control of selected significant new clinical laboratory procedures in the fields of Clinical Chemistry, Hematology, Immunohematology and Microbiology. The Institutes are presented throughout the country at adult education centers and/or medical schools and hospitals and are aimed at medical technologist teachers and supervisors who are in a position to instruct other laboratory personnel.

2. *Home-Study Programs*

The ASCP Check Sample Program is a year-round comprehensive, self-education and self-evaluation subscription program for pathologists, residents, technologists and most laboratory personnel. Now (1973) in its 16th year, this educational program is designed to keep the participants informed about the most recent developments in laboratory procedure. At present about 1,200 laboratories participate in this program. Each month subscribers have an opportunity to assay, interpret and compare their results and technique performance with the experts in the field. Each Check Sample exercise is made up of two parts. The first is a history and questions, with a specimen for examination or evaluation. The second part is a critique distributed about two weeks later, in which an authority in the field identifies the unknown, lists a range of values where applicable, answers the questions raised in this history, reviews appropriate current methodology and suggests additional reading. At the end of the program year, each participant receives an index of the critiques.

The ASCP Professional Self-Assessment Program provides medical laboratory personnel with the opportunity for voluntary evaluation of their knowledge in selected areas, and, by means of computer-scaled score reporting, to compare their achievement with that of their peers. The program guarantees anonymity to the participant. The Commission on Continuing Education is now concerned with completing details for supplying state and local societies, hospital groups, and individuals with the materials and expertise for on-site self-assessment.

The ASCP Technical Improvement Service is a publication dealing with practical education to assist the clinical laboratory in achieving high standards of day-to-day performance. This program has about 2,000 subscribers. Each of the four volumes provided in the TIS subscription program considers selected current methodology and techniques, troubleshooting, sources of error and practical quality control in Clinical Chemistry, Hematology, Immunohematology and Microbiology.

3. *Audiovisual Programs*

The ASCP Atlas Series: Each publication in this series consists of the personal extensive collection of an expert in his field. Each Atlas consists of a comprehensive selection of 35mm color transparencies, which are identified by title and number and stored in vinyl carriers. The slides are accompanied by the pertinent comments of the author. In some instances the presentation is by case method; in others, by a narrative discussion.

Anatomic Pathology Seminar Atlases: Since 1967 the teaching value of the traditional ASCP Annual Slide Seminar has been greatly enhanced by the publication of a companion Atlas. The Atlas provides a revised and edited version of the entire Seminar Proceedings, together with duplicates of the actual photomicrographs used by the panelists in their original presentations.

Audiovisual Seminars: The ASCP Audiovisual Seminars deal with more than 30 scientific subjects. The AV Seminars are authored and narrated by experts. Each seminar consists of a set of 35mm color transparencies, a synchronized 5" reel or cassette tape and, in most instances, a notebook with the complete printed text.

4. *Publications*

*The Summary Report,* a monthly subscription publication, is a forum for the exchange of practical information and opinions concerning the medical laboratory and its problems. *The Summary Report* is designed to provide an immediate evaluation of new techniques and instruments, a clearinghouse for the exchange of information and experiences, and a medium for questions and answers. It has about 2,000 subscribers, through whom, it is estimated, between 8,000 and 10,000 laboratory workers are reached.

The Laboratory Manual program provides a library with a wide range of clinical pathology subjects. The more than 65 manuals provide an introduction, detailed explanation and review of current concepts and techniques. Whenever applicable, visuals are included. With some exceptions, the publications originate as manuals for workshops of ASCP national meeting programs.

Anatomic Pathology Seminar Proceedings: These are a verbatim transcript of the Annual Slide Seminar. The development of an Anatomic Pathology Slide Seminar Atlas for the more recent seminars makes it possible to bring complete documentation of these programs to reference libraries and teaching institutions.

Clinical Pathology Seminar Proceedings: This series is ordinarily concerned with reproduction of the content of the CCE Council-sponsored Scientific Sessions that are now included as a feature of both the spring and fall national meetings. The Seminar Proceedings are published in paperback, pocket-sized editions, and cover the complete discussion of up-to-date techniques and opinions by the panel of experts.

5. *Special Projects*

At the spring and fall national meetings the CCE exhibits samples of current programs, publications and teaching aids throughout the meeting week. A year-round CCE Exhibit is also maintained at the ASCP Educational Center for the convenience of workshop participants and other visitors.

The CCE has participated in the production of a number of motion-picture films, most recent of which is the award-winning "Continuous Flow Analysis" – a 16 mm production available for purchase from the Society or for loan from the ASCP Film Library.

6. *Research and Development Projects*

A variety of new educational materials is in various stages of planning or production, including overhead projection materials, home-study cases, question and answer programs, and Laboratory Learning Aids. This last is a self-instructional "semi-programmed" series of audiovisual aids and printed materials, designed to teach elementary hematology and other subjects to beginners.

## FUTURE EDUCATIONAL ACTIVITIES

Decentralization and regionalization of activities seem inevitable, and so does expansion of home-study programs. It is anticipated that many of the Educational Center workshops and other programs will be suitable for videorecording. The introduction of home television converters, for playing videorecords, and cable television make this project important and exciting. In addition to home use, videorecording also provides the potential to distribute "packaged" workshops for use by local groups and other societies.

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## REFERENCES

1. American Hospital Association. *Invitational Conference on Comprehensive Health Planning.* American Hospital Association Chicago, Ill. 1969.
2. American Medical Association. *Peer Review Manual, Volumes I and II.* The American Medical Association, Chicago, Ill. 1972.
3. Becker, Marshall H. "Factors Affecting Diffusion of Innovations Among Health Professionals." *American Journal of Public Health.* Feb. 1970. pp. 295-303.
4. Bennis, Warren G., Benne, Kenneth D. and Chin, Robert, Editors. *The Planning of Change: Readings in the Applied Behavioral Sciences.* Holt, Rinehart and Winston, N.Y. Second edition. 1971.
5. Bjorn, J.C. "Physician's Assistant – Second Level Entrepreneur?" *Journal of the Maine Medical Association.* Vol. 62: 1971. pp. 133-134.
6. Bjorn, J.C., and Cross, H.D. *Problem-Oriented Practice.* Chicago, Ill. Modern Hospital Press, 1970.
7. Bodenheimer, Thomas S. "Regional Medical Programs: No Road to Regionalization." *Medical Care Review.* Dec. 1969. pp. 1125-1157.
8. Bretz, Rudy, *A Taxonomy of Communication Media.* A Rand Corporation Study. Educational Technology Publications, Englewood Cliffs, N.J. 1971.
9. Brown, Clement R., Jr. and Uhl, Henry S. "Mandatory Continuing Education: Sense or Nonsense?" *Journal of the American Medical Association.* Vol. 213, Sept. 7, 1970. pp. 1660-1668.
10. Burke, Edmund M. "Citizen Participation Strategies." *AIP Journal.* Sept. 1968. pp. 287-294.
11. Christopher, W.I. "Project 1997." *Hospital Progress,* Nov. 1961.
12. Cooper, Signe S. and Lutze, Ruth S. "Dial N for Nursing." *Adult Leadership.* December 1970.
13. Cross, H.D. "Educational Needs as Determined by the Problem-Oriented Medical Record." *Journal of the Maine Medical Association.* Vol. 61: 1970. pp. 49-54.
14. Dubin, Samuel S. and Marlow, H. LeRoy. *The Determination and Measurement of Supervisory Training Needs of Hospital Personnel. A Survey of Pennsylvania Hospitals.* Pennsylvania State Univ. Continuing Education, University Park, Pa. 1965.

15. Dunn, Helen W. and Morgan, Elizabeth M. *The Nursing Audit.* National League for Nursing, New York, N.Y.

16. Gagné, Robert M. *The Conditions of Learning.* Holt, Rinehart and Winston, N.Y. (Second Edition). 1970.

17. Georgopoulos, Basil S., Editor. *Organization Research on Health Institutions.* Univ. of Michigan. Institute for Social Research. Ann Arbor, Mich. 1972.

18. Hamaty, D. "West Virginia State Medical Association's Voluntary Peer Review Service". *West Virginia Medical Journal.* Sept. 1970. pp. 307-309, 323-329.

19. Havelock, Ronald G. *Guide to Innovation in Education.* Institute for Social Research, Center for Research on Utilization of Scientific Knowledge (CRUSK). Univ. of Michigan, Ann Arbor, Mich. Fourth printing March 1972.

20. Havelock, Ronald G. *Planning for Innovation Through Dissemination and Utilization of Knowledge.* Center for Research on Utilization of Scientific Knowledge (CRUSK), Univ. of Michigan. Ann Arbor, Mich. 1971. 533 p.

21. Havelock, Ronald G., Huber, Janet C. and Zimmerman, Shaindel, Compilers. *Major Works on Change in Education.* Center for Research on Utilization of Scientific Knowledge (CRUSK). Univ. of Michigan, Ann Arbor, Mich. October 1969.

22. Hospital Research and Educational Trust. *Correspondence Education and the Hospital.* Hospital Research and Educational Trust, Chicago, Ill. 1969.

23. Hospital Research and Educational Trust. *Programmed Instruction and the Hospital. A Report on the Use of Programmed Instruction in Health Care Institutions.* Hospital Research and Educational Trust, Chicago, Ill. 1967.

24. Hospital Research and Educational Trust. *Training and Continuing Education: A Handbook for Health Care Institutions.* Hospital Research and Educational Trust, Chicago, Ill. 1970.

25. Houle, Cyril O. *The Design of Education.* Jossey-Bass Inc. San Francisco, Cal. 1972.

26. Hurst, Willis J. and Walker, H. Kenneth, Editors. *The Problem-Oriented System.* MEDCOM Learning Systems. New York, N.Y. 1972.

27. Kaufman, Robert A. *Educational System Planning.* Prentice-Hall, Inc., Englewood Cliffs, N.J. 1972.

28. Kissick, William L. "Health-Policy Directors for the 1970's." *New England Journal of Medicine.* June 11, 1970. pp. 1343-1354.

29. Klarman, Herbert E. "Present Status of Cost-Benefit Analysis in the Health Field." *American Journal of Public Health,* Nov. 1967. pp. 1948-1953. 25 references.

30. Lysaught, Jerome P. Editor. *An Abstract for Action.* McGraw-Hill Book Co., N.Y. 1970.

31. Lysaught, Jerome P. "From Abstract into Action." Progress Report from the National Commission on Nursing and Nursing Education. *Nursing Outlook,* March 1972. p. 173.

32. Lysaught, Jerome P., Editor. *Individualized Instruction in Medical Education.* Rochester Clearinghouse on Self-Instructional Materials for Health Care Facilities. Univ. of Rochester, Rochester, N.Y. 1968.

33. Lysaught, Jerome P., Editor. *Programmed Instruction in Medical Education.* Rochester Clearinghouse for Information on Self-Instruction in Medical Education. Univ. of Rochester, Rochester, N.Y. 1965.

34. Mager, Robert F. and Pipe, Peter. *Analyzing Performance Problems.* Fearon Publishers, Belmont, Cal. 1971.

35. Mager, Robert F. and Beach, Kenneth M., Jr. *Developing Vocational Instruction.* Fearon Publishers, Belmont, Cal. 1967.

36. Medical College of Virginia. *Law Institute on Hospitals and Medicine.* Prepared and Published by Continuing Education Department, School of Hospital Administration and Department of Legal Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, Va. 1971. 193 p.

37. *Michigan Medicine.* "The Michigan Physician and His Continuing Education," Nov. 1970. "The Michigan Physician: His Work Needs and Opportunities," Dec. 1970. "The Michigan Physician's Use and Evaluation of His Medical Journal," Jan. 1971. "The Michigan Physician: His Use and Evaluation of the Professional Meeting and (Postgraduate) PG Courses," Feb. 1971. "The Michigan Physician: His Education Through Face to Face Contacts and Technical Media," March 1971. "The Michigan Physician: His Perception of Competence, Worries and Obsolescence," April 1971. "The Michigan Physician and Continuing Education: Looking to the Future," May 1971. "The Michigan Physician and His Continuing Education: Summary and Conclusions," June 1971.

38. Miller, George E. "Continuing Education for What?" *Journal of Medical Education.* Vol. 42, April 1967. pp. 320-323.

39. Nakamoto, June and Verner, Coolie. *Continuing Education in the Health Professions: A Review of the Literature 1960-1970.* ERIC Clearinghouse on Adult Education, Syracuse, N.Y. 1973.

40. Neuhouser, Duncan. *The Relationship Between Administrative Activities and Hospital Performance.* Univ. of Chicago. Center for Health Administration Studies. Chicago, Ill. 1971.

41. Niles, Anne, Cooper, Signe S. and Asthana, Martha. *Definitive Dialing: Nursing Dial Access.* Univ. of Wisconsin, Department of Nursing, University Extension, Madison, Wis. 1970.

42. Niles, Anne. "Dial-a-Tape for Continuing Education." *NUEA Spectator.* March 1972.

43. *Patient Care.* "Your Practice Skills and Deficits" and "Which Conditions Occupy Most of Your Time?" May 15, 1971. pp. 39-149.

44. *Patient Care.* "From West Virginia: The Doctor's Office Becomes His Classroom." *Patient Care.* May 30, 1971. pp. 39-43.

45. Phaneuf, Maria C. *The Nursing Audit: Profile for Excellence.* Appleton-Century Crofts, N.Y. 1972.

46. Rogers, Everett M. and Shoemaker, F. Floyd. *Communication of Innovations: A Cross-Cultural Approach.* The Free Press, N.Y. 1971. 476 p.

47. Schein, Edgar H. *Professional Education: Some New Directions.* Tenth of a Series of Profiles Sponsored by The Carnegie Commission on Higher Education. McGraw-Hill Book Company, N.Y. 1972. 163 p.

48. Scriven, M. "The Methodology of Evaluation" in Stake, R.E., Editor. *AERA Monograph Series on Curriculum Evaluation, No. 1.* Rand McNally, N.Y. 1967.

49. Slee, Vergil N. *Criteria for Effective Utilization Review.* The Hospital Utilization Project. Pittsburgh, Pa. 1969.

50. Slee, Vergil N. "The Future of the Medical Audit". Univ. of Colorado, School of Medicine, Boulder, Colo. 1970.

51. Spillane, E.J. "A Survey Report on Personnel Directors." *Hospital Progresss.* Nov. 1966.

52. Stearns, Norman S., Getchell, Marjorie E. and Gold, Robert A. *Continuing Medical Education in Community Hospitals: A Manual for Program Development.* Postgraduate Medical Institute. 1971. Published by the Massachusetts Medical Society as a supplement to the *New England Journal of Medicine.* Vol. 284, No. 20, May, 1971.

53. Steele, Sara M. *Contemporary Evaluation Models and Their Implications for Evaluating Programs for the Disadvantaged.* ERIC Clearinghouse on Adult Education. Syracuse, N.Y. 1973.

54. Steele, Sara M. *Cost-Benefit Analysis and the Adult Educator: A Literature Review.* ERIC Clearinghouse on Adult Education, Syracuse, N.Y. 1971. 28 p.

55. Steele, Sara M. "Program Evaluation as an Administrative Concept." Paper developed for the American Educational Research Association Annual Meeting, New Orleans, La. Feb. 28, 1973. 37 references.

56. Stolurow, L.M., Editor. *Computer Assisted Instruction in the Health Professions.* Entelek, Inc., Newburyport, Mass. 1970.

57. Study of Accreditation of Selected Health Educational Programs (SASHEP). *Part I: Staff Working Papers.* Council on Medical Education, American Medical Association, Chicago, Ill. Oct. 1971.

58. Study of Accreditation of Selected Health Educational Programs (SASHEP). *Part II. Staff Working Papers.* National Commission on Accrediting, Washington, D.C. Feb. 1972.

59. Study of Accreditation of Selected Health Educational Programs (SASHEP). *Commission Report.* The National Commission on Accrediting, Washington, D.C. May 1972.

60. U.S. Department of Health, Education, and Welfare. *Equivalency and Proficiency Testing: A Survey of Existing Testing Programs in Allied Health and Other Fields.* Public Health Service, National Institutes of Health. G.P.O. 1971.

61. U.S. Department of Health, Education and Welfare. *Guidelines for Evaluation of Continuing Education Programs in Mental Health.* National Clearinghouse for Mental Health Information, National Institute of Mental Health. DHEW Publication No. (HSM-72-9014). G.P.O., Washington, D.C. 1971. 16 p.

62. U.S. Department of Health, Education, and Welfare. *Regional Medical Programs: National Conference and Workshop on Evaluation, 1970.* Regional Medical Programs Service, Health Services and Mental Health Administration. DHEW Publication No. HSM-71-7010. Center for Continuing Education, Univ. of Chicago. Chicago, Ill. 1971. 235 p.

63. Wagner, Carruth J. "A Systems Approach to Health Planning," in *Planning for Health: Report on the 1967 National Health Forum.* National Health Forum. Chicago, Ill. 1967.

64. Williamson, John W. Alexander, Marshall, and Miller, George E. "Priorities in Patient-Care Research and Continuing Medical Education." *Journal of the American Medical Association.* Oct. 25, 1971. pp. 564-569.

# Life-Long Self-Directed Education

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## PART ONE: CONTINUING PROFESSIONAL EDUCATION

Professionals in the health sciences such as medicine, nursing, dentistry, public health, medical social work, pharmacy and clinical psychology, apply their competence (knowledge and skill) to help people maintain and reestablish health. Practitioners in other helping professions such as teaching, ministry and law, also apply their competence to deal with other complex problems. Because the requirements of competence, the nature of the problems and the interface between them are constantly changing – and at an accelerating rate – continuing education is an essential ingredient of both preparatory professional education and the maintenance of professional competence[58, p. 16; 29, p. 562; 48, p. 8; 40, p. 123].

### Relations Between Education and Practice

Most professional problems are problems of the application of knowledge and skills to decisions and actions for which the professionals are personally accountable. This is a major reason why continuing professional education is largely self-directed[29, p. 568; 40, p. 125].

*The purpose of continuing education for health professionals is the improvement of patient care and health maintenance, and the enrichment of health careers*[19]. The focus should be on the patient as a problem of treatment and as an exercise in learning[42, p. 111]. The basic criterion for the evaluation of the relevance and effectiveness of continuing education for health professionals is the improvement of patient care[40, p. 123]. However, professional competence has several dimensions – scientific and technological, and also personal and societal. Continuing education to maintain competence takes time, which is the professional's most precious resource, and it also takes many other kinds of resources. A limitation of self-education is that it can easily be short-sighted. This situation presents a challenge to those who would develop programs of continuing professional education. Some factors facilitate program development, others are barriers. Some resources are local, others are not available locally. The challenge is to strengthen the facilitating factors and weaken the barriers, and to make resources over large areas both known and used.

The *facilitators* of continuing education are associated with the personal characteristics of the individual professional, his profession, and the societal setting in which he functions. The facilitators associated with *personal characteristics* include:

(1) the high level of communication ability of professionals compared with most other adults.

(2) the extent to which the professional has developed a questioning and problem-solving orientation,

(3) the recognition that people forget much that is not used or reviewed, and

(4) the extent to which the professional has learned how to effectively learn from unfamiliar material and from mistakes.

The facilitators associated with the characteristics of the *profession* include:

(1) the centrality of life-long learning in the definition of a profession,

(2) the changes in the roles of many health professionals,

(3) the shifting scientific base with increased emphasis on the social and behavioral sciences and a greater focus on aspects of biological and physical sciences that are pertinent to clinical practice, and

(4) the conviction that the elapsed time should be shortened between the completion of secondary school and entry full-time into professional practice.

The facilitators associated with the characteristics of the *societal* setting include:

(1) the rapid increase in pertinent knowledge which produces obsolescence,

(2) the continuing developments in technology related to the health professions,

(3) the major changes in a competitive pharmaceutical industry which makes it important for the professional to place a premium on impartial information,

(4) the extension of collaborative regional arrangements for health manpower, and

(5) the stronger public image of continuing education which results from the expanding number of programs.

The *barriers* to continuing education are associated with the personal characteristics of the individual professional, his profession, and previous programs of continuing education. The barriers associated with *personal* characteristics include:

(1) the image from preparatory education that education is passive reception of information from experts.

(2) the difficulty that the professional encounters when he tries to break habit patterns and a life-style that have excluded continuing education, and

(3) the tendency to utilize continuing education methods that are convenient when more effective methods require more effort.

The barriers associated with the characteristics of the *profession* include:

(1) the frequent insulation of the practitioner from feedback and norms that peers can provide,
(2) the heavy demands by patients for service, which is most severe in areas with critical health-personnel shortages,
(3) the inadequate basis for selecting from an overwhelming flood of professional literature, which often results in apathy, and
(4) the lack of penalty for unused knowledge.

The barriers associated with previous *continuing education* programs include:

(1) the heavy reliance on sponsors such as universities, associations, and the pharmaceutical industry, and the underutilization of community hospitals and other settings that are closest to clinical practice,
(2) the image of continuing education as formal programs that are overwhelmingly specialized, concerned with unusual developments, organized within subject-matter fields, and unresponsive to the ways in which adults learn most effectively, and
(3) the lack of convincing evaluation-findings regarding a major impact of continuing education participation on professional practice and patient care.

## Regional Health Manpower

An approach to continuing education that relies heavily on the individual to guide his own learning activities is vulnerable to nearsightedness. The individual professional is less likely to become familiar with new knowledge and practices than is a university or an association or a hospital. A practitioner can become so beleaguered by the torrent of professional problems which assail him that he loses the broad perspective and the reflective attitude.

One of the major functions of many of the regional efforts to develop health manpower is to facilitate the efforts of health professionals to continue their education. A basic form of facilitation is to assist the professional to become aware of and to use the resources for continuing education that are available in the region. In some regions, this includes the development of a telephone-based consultant service. What better basis for a partnership, than when the professional wants what the regional arrangement wants to provide?

Most professionals have a sense of the geographic region in which they function professionally and socially. The size of the area partly reflects population density. In the Rockies, the region for a practitioner can be the area of a state or more. In New York City, it can be a section of the city. The size of a professional's region also reflects his own cosmopolitan or local orientation. Some professionals, due to their renown or preferred life-style, give service and receive resources on a national or international scale. Other professionals, whether in the Rockies or on the East Side of Manhattan, give and receive within a very local setting. One purpose of most regional health manpower efforts is to enrich the range of resources to which the practitioner has access.

Practitioners tend to be aware of and to use resources related to continuing education more from habit and familiarity than from deliberate choice to meet a specific need. Many of the current efforts to develop regional health manpower have given some attention to inventorying resources related to the region, to helping practitioners become more familiar with the resources, and to encouraging program development that draws upon the most appropriate resources through arrangements such as cosponsorship. The resources related to continuing professional education in a region include not only the institutions, associations and libraries in the region, but also many of the national resources that can be utilized in the region if practitioners know about them and about how to obtain them.

Some national resources are in the form of publications, library holdings, consultation, statistical data, grant support, and opportunities for unique clinical experience that are provided by agencies of the Federal government. Many are part of the Department of Health, Education, and Welfare. Examples of Federal agencies related to the health sciences include Public Health Service, National Institute of Health, National Library of Medicine, and the Veterans Administration Hospitals. One function of the Regional Medical Program was to make the resources for continuing education that are available from these agencies more accessible to local practitioners[17, p. 617-619].

Other national resources are not part of the Federal government but they serve supplementary as well as complementary functions. Examples include the national societies and associations of health professionals, the national voluntary health agencies, the large and nationally known private philanthropic foundations, and the entire range of publications and journals with a national distribution. These national resources provide sponsorship of continuing education programs, support research, provide information about new developments, support pioneering projects related to continuing education of health professionals[53], and engage in accreditation procedures.

The regional resources vary somewhat among regions. Examples of regional resources include the state and local professional associations, the state health department, the local foundations, the voluntary agencies, the universities (especially those that include colleges related to health professions), and both the university-related teaching hospitals and the community hospitals. These regional resources provide sponsorship of continuing education programs, support of projects, research related to medical and health education, consultation, and information about opportunities for continuing education.

The individual professional may interact with national and regional resources in various ways. The evident way is the provision of books, journals, workshops and courses that the practitioner can use to continue his education. The less evident ways are also important for the professional who is highly self-directed in continuing his education. Continuing education programs that are designed to encourage and reward a high degree of self-directedness by participants increase the likelihood that professionals will develop habits and skills of self-directed education which they will use outside of formal programs. Many formal programs have little transfer to less formal settings and may even promote the idea that continuing education requires formal settings and experts. Another form of interaction relates to the ability of the professional to utilize resources to continue his education. Some continuing professional education programs help participants to become effective users of library resources, statistical data, computer printouts, home-study materials, and consultants. Professionals who are able to use these learning resources are more likely to continue their education in a self-directed way. There is a tendency for university sponsors of continuing education to emphasize experts, organized knowledge, new developments and "what ought to be." There is a tendency for professional association sponsors of continuing education to emphasize the societal context in which the professional works, practical problems and "what is." The self-directed learner needs to be able to move back and forth between these two domains, to alternate between the action problems that confront him and the knowledge resources that can help with solutions. All sponsors of continuing education can develop programs that help professionals to better link knowledge and action.

The persons whose job it is to help develop health manpower in a region have an important role to perform related to life-long self-directed education. That role is related both to the sponsors of formal programs of continuing professional education and to the individual professionals who continue their education in a self-directed way. In working with both individuals and sponsors, the role is as a "linkage agent" between learning resources and practitioners engaged in learning. This linkage role is typically performed by staff members with the regional medical program, university faculty members and administrators engaged in continuing education within the various health professions, staff members of state health departments, and staff members and officers of the various health-related professional associations. The term "linkage agent" refers to the similar role performed by these persons with diverse position titles. The success of these "linkage agents" depends in part on the conceptual model they have of life-long self-directed education. Their conceptual model provides a basis for appraising the extent to which continuing education activities are self-directed and have an impact on professional practice. As they work with sponsors, "linkage agents" can use this model to suggest ways in which continuing professional education programs can do more to help the participants to develop a repertoire of effective strategies for alternating between action problems and knowledge resources. As "linkage agents" work with individual professionals, they can strive to accomplish three objectives. One is to use precept and example to help professionals develop a more complete understanding of the importance and methods of life-long self-directed education. A second is to encourage and assist professionals to become more self-directed in their continuing education. A third is to develop procedures and aids that will increase the accessibility of learning resources for professionals who want to assume the primary responsibility for continuing their education.

## Approach to Continuing Education

This chapter presents a general approach which emphasizes life-long self-directed education. The approach places the main responsibility for continuing education on the individual professional. It recognizes that professionals vary greatly in self-directedness and the amount of assistance they need. The approach is based on the following three *assumptions.*

(1) The effective self-directed learner performs for himself most of the mentor roles that are performed by an effective teacher of adults.

(2) The basic, and generally underemphasized, process that undergirds successful self-directed education is the use of a repertoire of effective strategies for alternating between action problems and knowledge resources.

(3) Self-directed education will typically persist throughout a professional's career because the evident benefits in the form of improved professional performance are sufficient to sustain interest and to guide selection of subsequent professional development.

The proposed approach to self-directed continuing professional education consists of the following five interrelated *components* which are presented schematically in Figure One.

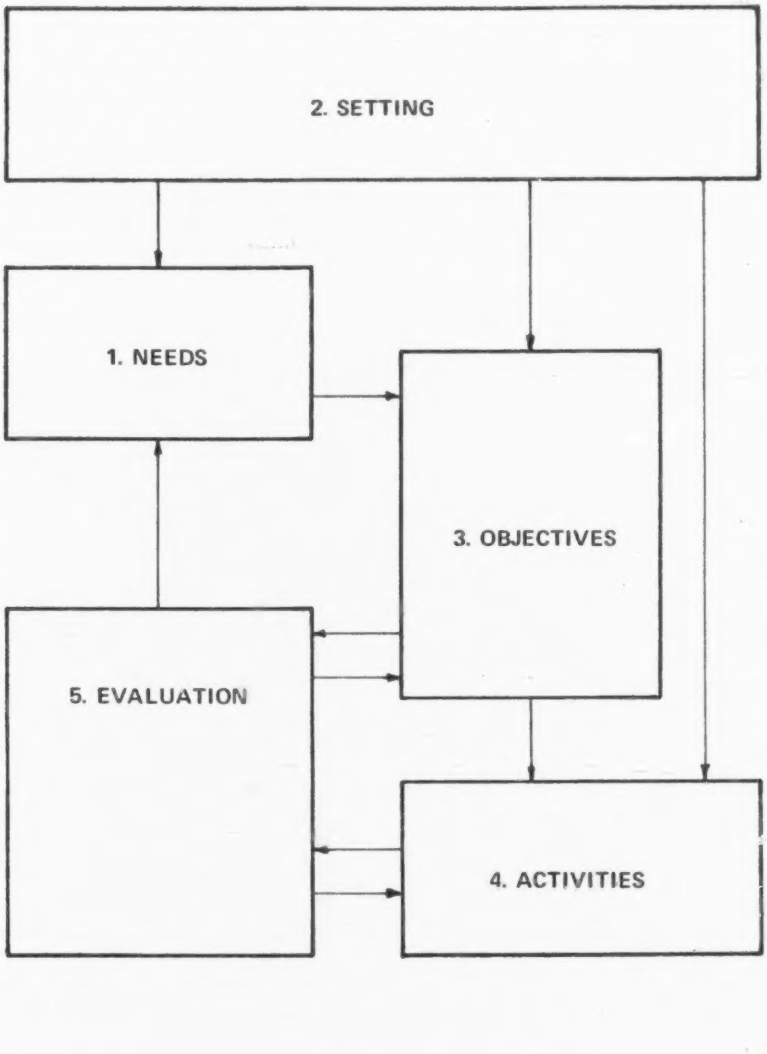
2. SETTING
1. NEEDS
3. OBJECTIVES
5. EVALUATION
4. ACTIVITIES

Figure One
Schematic Representation of
Components of Mentor Role

(1) Identify the major gaps between actual and criterion performance (NEEDS).
(2) Become aware of the setting as it relates to continuing education, including the criterion of patient care, and facilitators and barriers to continuing education (SETTING).
(3) Select those educational objectives that have high priority regarding both desirability and feasibility (OBJECTIVES).
(4) Select and organize learning activities that will produce and sustain more effective professional performance (ACTIVITIES).
(5) Evaluate the extent to which the components of the continuing professional education activity meet the expectations of the people associated with it (EVALUATION).

The self-directed approach to continuing education of health professionals has three additional potential benefits. One is the basis that it provides for planning regional development of health manpower in a way that encourages the contribution of all sponsors and resources. The second is the contribution that it makes to persons who endeavor to facilitate the efforts of health professionals to continually increase their competence and improve patient care and health maintenance. The third is the basis that it provides for the articulation between various disciplines and between preparatory and continuing professional education.

## Articulation Between Preparatory and Continuing Education

Most writers on continuing professional education affirm the importance of a self-directed orientation[28; 29; 30; 39; 40]. Some of them, along with a few of the writers on preparatory professional education, stress the importance of continuity between preparatory education and continuing education in this regard. The typical point that is made regarding continuity is the influence of the preparatory education experience in medical school or nursing school or dental school on the outlook that the professional has towards continuing education. Less often mentioned is the renewing influence that an effective continuing education effort of a professional school can have on the preparatory education program.

During the past decade or so, many professional schools have modified their preparatory education curriculum and instructional methods in ways that have increased the likelihood that graduates continue their education[48]. In some instances, these modifications were deliberately made so that a basic objective of preparatory education would be the development of a questioning approach that would encourage and facilitate life-long learning. More often the modifications were made for other reasons, but the benefits for continuing education were a valuable by-product. Preparatory professional education that encourages students to engage in life-long self-directed education tends to have the following characteristics:

(1) in general, the existence of more curricular flexibility than is typically the case, which enables students to combine interdisciplinary blends of knowledge and skill and to pursue innovative career paths[48, pp. 60-65],

(2) sufficient indepth preparation in the major supporting disciplines to understand the structure of knowledge in those disciplines as a foundation for further study and subsequent selection of knowledge to solve professional problems,

(3) clinical study that entails the selection of pertinent knowledge from several disciplines and the organization of that knowledge in relation to professional problem-solving,

(4) clinical study that occurs earlier in the professional school curriculum[48, pp. 117-118],

(5) curricular integration of the social and behavioral sciences with the physical and biological sciences for some units[48, p. 149],

(6) preparation by faculty members of learning modules which students can study quite independently[48, p. 149], and,

(7) administrative arrangements that encourage student self-diagnosis, curricular flexibility, and program evaluation[48, p. 149].

When a student graduates from professional school, he confronts several crucial years of early practice[48, p. 54; 42, p. 351]. During this transition period, the new professional typically learns most of the practical tasks that fill his professional day, and he develops much of his self-concept as a professional. In most instances, preparatory education just starts the process of becoming a professional. During the first few years of actual practice the professional is very susceptible to influence as he responds to the demands and constraints related to his profession. Most professionals receive little help with this transition[48, p. 54]. The transition would be facilitated for many graduates if there were greater variety in the early career paths for each profession. For example, a health professional might have the choice of solo practice, group practice, employment by a hospital, employment by a neighborhood health center or work with a government agency. The extent of flexibility and variety that does exist for new professionals is influenced by professional schools, licensing regulations, professional associations, employers and hospitals. Although some continuing education has been focused on this transition period, much more is needed.

Effective programs of *continuing education* can have a beneficial and renewing *influence on preparatory education* in the following four ways.

(1) If practicing professionals insist on a multidisciplinary problem-solving approach to continuing education, then the resulting methods and materials can be readily adapted for use with preparatory education students.

(2) If practicing professionals work with resource persons in continuing education programs and emphasize learning methods in which the main responsibility is assumed by the learner and the main criterion is professional performance, then the resource persons are more likely to use these methods as they teach preparatory education students.

(3) If professionals with their detailed concerns about prevailing practice are encouraged to develop strategies to relate these concerns to new developments and excellent practice such as might be advocated by universities and major hospital centers, then the resulting strategies can be adapted for use in preparatory education programs.

(4) If some continuing education programs are available to deal with important topics that are not central to preparatory education or that are best learned after the individual enters the profession, then some of the currently heavy time and effort demands on preparatory education can be reduced[48, p. 126].

## Purpose of Chapter

The general purpose of this chapter is to present a rationale with examples for an approach for professionals in the health sciences to become more self-directed in the ways in which they continue their education throughout their career. More specifically, the chapter is designed to enable the reader to achieve the following five objectives.

(1) *To understand the functioning of the five components of the mentor role as they are used to guide self-directed education of health professionals.* The five components are: (a) the identification of gaps between actual and desirable behavior, (b) an awareness of the influences of the setting on continuing education, (c) the use of priorities to select the continuing education objectives, (d) the selection and organization of learning activities to increase competence and encourage its utilization, and (e) the evaluation process of making judgments, based on evidence, regarding the effectiveness of the educative activity in ways that facilitate the use of conclusions to improve the educative activity.

(2) *To better understand a variety of effective strategies by which professionals in the health sciences can alternate between action problems and knowledge resources.* Professionals are appropriately action-oriented. In the health sciences their central concern is an improvement of health maintenance and patient care. Within each region there are many resources available to assist health professionals to increase their competence. The proposed approach is designed to assist professionals to diagnose their educational needs and the available resources to meet those needs so that they can continually increase their competence and improve their professional performance throughout their career.

(3) *To recognize the way in which self-directed education fits into the broader context of continuing professional education.* There is widespread agreement on the demands for professionals to continually increase their competence and on the range of opportunities to do so. There is also widespread dismay about the lack of participation in continuing education. Half of all professionals fail to do so in the course of a year[33, p. 76]. Explanations for lack of participation include the beliefs that too many professionals care too little about life-long learning, and that too many continuing education programs are too little related to professional practice. Clearly there are many facilitators and barriers to participation in continuing education. A major challenge in the use of the proposed self-directed approach to life-long learning is to utilize the alternation between knowledge and action to assist the facilitators and to minimize the barriers that influence continuing professional education generally.

(4) *To recognize that self-directedness in learning is a continuum, which can be used by professionals to discover ways in which learning effectiveness can be improved.* The focus of the proposed approach is on a high degree of individual responsibility for decisions regarding educative activity. The approach can be used by all professionals to help them (a) to reflect on the extent to which they are self-directed learners and (b) to identify points at which they want to become more self-directed.

(5) *To appreciate the several ways in which the proposed approach to life-long self-directed education can be used.* The main applications of the proposed approach include: (a) to describe procedures by which the health professional can continue to increase his competence, (b) to indicate ways in which leaders of health teams can assist other team members to continue their education, (c) to specify useful tasks for "linkage agents" engaged in the development of health manpower in a region, (d) to provide a rationale that can facilitate the efforts of health professionals to make the transition from one specialization in their field to another, and (e) to suggest implications for ways in which preparatory education programs in the health sciences better prepare professionals for life-long self-directed education.

The *focus* of this chapter is on professionals in the *health sciences.* There are many similarities in effective continuing education for the dentist, nurse, physician and medical social worker because of their similar preparation and participation as members of health teams. In this chapter, the term "professional" is used to refer to all types of professionals in the health sciences when statements about continuing education are applicable to all health fields. There are, however, some unique characteristics of each type of health professional that influence their continuing education. Reference is made to specific types of health professionals at points at which their roles differ regarding continuing education.

Part Two of this chapter presents an *approach* to the mentor role by which the individual can guide his own professional development. This approach describes the basic dynamics of the self-directed learner in action. Part Three contains examples of *activities* related to the proposed approach, which have occurred in the health professions. The examples are provided to facilitate adaptation and application of the proposed approach to specific situations. Part Four provides guidelines for "linkage agents" engaged in the development of health manpower in a region, by which they can *assist professionals* to continue their education in more self-directed ways.

## PART TWO: MODEL OF MENTOR ROLE

The process of effectively planning and guiding continuing education is basically the same whether the learner is somebody else or oneself. The basic similarities are described in the subsequent sections on the components of the mentor role. The fundamental decisions and procedures for each of the components occur, at least implicitly, in both self-education and education of others. In both instances the mentor takes learner needs and situational influences into account in the selection of educational objectives; in both instances he organizes learning activities; and in both instances, he makes judgments about the effectiveness of continuing education efforts. There are, of course, some differences. The successful self-directed learner is able to recognize and influence the facilitators and barriers that affect his learning. Those who are unsuccessful typically fail to do so, become discouraged and give up. Those with much experience in the mentor role for others learn to recognize learning problems, diagnose them and then provide or seek assistance. The model of the mentor role that undergirds this chapter applies to self-directed education and to facilitation of the learning of others.

A professional who effectively plans and guides a major learning episode for himself or another person typically attends to five interrelated components of the mentor role. The mentor role is comparable to the teaching part of the teaching-learning transaction. However, in self-directed education, the overwhelming emphasis is on the learning part of the transaction. The five components deal with needs, setting, objectives, activities and evaluation. The components are interrelated and, because their interrelationships must be considered, the planning or improvement of continuing education can begin with any component and proceed to relationships with each of the other components until all have been taken into account. The components are not presented as a series of five steps. Even though there is a great range of individual differences in the extent to which practitioners systematically increase their competence and guide the professional development of themselves and others, the facilitation of learning is an important dimension in the role of many professionals in the health sciences. A major challenge to preparatory professional education is to increase the proportion of graduates who are self-directed in their continuing professional education. One valuable result will be to increase the proportion of practitioners who are *role innovators*, and who explore new ways in which the health professions can be of service to society[48, p. 51]. The proposed approach to the mentor role provides a rationale to facilitate efforts of the professional to alternate between action problems and knowledge resources[29, p. 562]. The remainder of Part Two provides an overview of the five components of the mentor role. The part concludes with a list of "linkage" activities in which a professional and another person can engage to help the professional to continue his education in a self-directed way.

## Need Appraisal

A practicing professional is unlikely to change much unless a gap is identified between his or her actual present behavior and a changed behavior that is deemed more desirable. The term "behavior" refers to knowledge, skill, attitude and also the combination of all three in the form of performance. In the description of actual practice, unless records of observations and decisions are made and reviewed, many practitioners will be unable to accurately describe their practice[42, p. 431; 43, p. 11]. One way to define more desirable behavior is by reference to criterion performance based on attainable standards of excellence that reflect the performance of the most for health professionals. In the formulation of standards of excellence for health professionals, reference should be made to the impact of their performance on health maintenance and patient care. Professional practice provides the context and reference points for the need-appraisal process. The gaps that are identified can be thought of as needs, weaknesses or deficiencies. They can also focus on content, performance, goals, process or opportunities. There are usually too many gaps for a professional to attend to at once, so some method for selection must be used, such as to focus on the major areas of practice[8, p. 1664]. The identification of some major gaps serves two purposes. One purpose is to provide the basis for the selection of educational objectives and learning activities. The second purpose is to assure that the person who would change has moved from apathy or slight awareness regarding the gap to interest and commitment to narrowing the gap by a change in his behavior. The habits and defense mechanisms of most professionals, along with the restraint from their autonomy and authority, are sufficiently strong so that some unsettling event, such as a difference of opinion with peers or the review of the results of need-appraisal inventory, is required to "unfreeze" the individual and to stimulate sufficient motivation to engage in systematic educative activity to bring about the change[13, p. 19; 23; 36]. The individual professional must usually participate in the need-appraisal process by which the major gaps are identified if he is to be moved to do much to close the gaps. Personal self analysis is especially important because the selection of the most urgent needs is the most important way in which the professional can set his educational priorities. Other people can assist with the process, however. One way is by providing a rationale for the need appraisal process including specification of the types of information to be collected and analyzed. Examples of such types of information include evidence of patient care based on audits of patient charts and surveys of patient perceptions, evidence of aspirations and critical incidents related to professional practice, and the categories of diseases that are emphasized by the health agencies. A second way is to provide convenient procedures for the professional to identify the major gaps for himself. A third way is to work with the most able professionals in the field, a sort of college of peers, to prepare attainable standards of excellence to use as criterion performance that the professional can compare with his actual present performance in order to identify the major gaps. The need appraisal process provides a method for linking continuing professional education with professional practice, and also for identifying educational needs of professionals that transcend problems of practice and that explore opportunities for career enrichment.

## Awareness of Setting

Both professional performance and educative activity occur within a societal and professional context that influences the performance of the individual practitioner. One component of the mentor role is becoming aware of the major influences in the professional setting and harnessing some of them so as to increase the likelihood of professional development. There are three types of contextual influences on continuing professional education. One type of influence is the set of criteria against which the effectiveness of continuing education is judged. For continuing education for health professionals, the main criteria are improved patient care, increased health maintenance, and enriched health careers[42, p. 331; 19]. Another type of contextual influence is the set of positive influences and resources that facilitate participation in continuing education. Examples of such facilitators include the high value that the health professions place on life-long learning; the encouragement and help that is available from program sponsors such as universities, associations and community hospitals; the educational materials that are available to the self-directed learner; hospital quality-assurance programs; requirements for relicensure; and the growing public concern about quality control in the health-care field. A third type of contextual influence is the set of negative influences that serve as barriers to continuing education participation. Examples of such barriers include widespread professional insulation from normative standards, insistent demands for patient care, an overwhelming torrent of new information and developments, and the higher costs of many of the methods of continuing education that have a greater impact on patient care.

## Setting Objectives

The health professional typically confronts far more gaps to be narrowed by continuing education than he can attend to. *Priorities must be set,* if only by default. Some practitioners deal with this choice situation by ignoring all gaps or by participating in the continuing education programs that make the earliest or the strongest appeal, up to the point at which further time for continuing education cannot be justified. A component of the mentor role of the self-directed learner is the selection of objectives upon which to focus his continuing education activities. The selection process includes a review of the sources of objectives and a listing of the major objectives that might be attended to. The main source of educational objectives is an analysis of professional practice[40, p. 126; 8, p. 1667]. Other sources include opinions of practitioners, analyses of issues that impinge on the professional field, and recommendations of experts in disciplines related to the professional field. The process by which objectives are selected also includes the selection of the high priority objectives by use of two criteria – desirability and feasibility[56, pp. 22-28]. The desirability criterion reflects both the size of the gap and the extent of the problem that is created if the gap is not narrowed[62]. The feasibility criteria reflects the extent to which the professional could actually do something that would substantially narrow the gap, even with assistance. The self-directed learner must assume the primary responsibility for deciding on educational objectives. There is perhaps no other component of the mentor role where his active participation is more important. However, other persons can make secondary contributions. Examples include helping the practitioner to reflect on the relation between alternative objectives and his career aspirations, or indicating the amounts and types of efforts that others have had to make to achieve an objective that is being considered. With the combined contribution by himself and others to the objective-setting process, the professional should be better able to select objectives for his self-directed education that can restructure concepts that are directly applicable to professional practice[42, p. 112] but that avoid overspecialization and dehumanization[42, pp. 212-213].

## Learning Activities

The most evident component of the mentor role deals with the learning activities themselves. Learning occurs mainly as a result of an interaction of individuals with new information or experiences. This interaction typically takes the form of activities such as reading, listening, writing, discussing and viewing. These activities have been developed singly and in combination in dozens and dozens of learning methods, most of which are available for use in self-directed education. This component of the mentor role consists of the selection and organization of learning activities to achieve the educational objectives and to fit the learning style of the individual learner. It is assumed that the mentor-role components on needs, setting and objectives have been attended to and that decisions have been made regarding priority needs, facilitators, barriers, incentives and relevant objectives.

The range of potential learning activities from which the self-directed learner can select includes some that are formal and preplanned such as a televised course, an auto-instructional learning module and a weekend workshop; some that are informal and organized by the learner such as reading, travel and informal discussion with peers; and some in which the learner guides the activity with the assistance of others who set up the arrangements such as a consultation service, a preceptorship and a communication network. All components of the mentor role can be highly educative for the self-directed learner who uses the decisions, problem and activities that each entails as opportunities to learn more about himself and about the topics that are studied. For example, in the need-appraisal process, the identification of a gap between actual and criterion performance can yield valuable insights even though no effort is made to narrow the gap. These insights can be similar to the shift from apathy through awareness and interest to commitment in the process of diffusion and adoption of innovative practices. Within that same process the learning-activities component can be similar to the trial-and-adoption stages.

Some learning activities enable the learner to try out new ways of thinking or performing and to accomplish a change in behavior. Examples include reading related to clinical practice or observation of a demonstration of a clinical technique. However, learning about an area of professional performance does not automatically lead to a competent level of performance let alone incorporation of the area of performance into regular practice. Some learning activities are more likely to enable the learner to develop a competent level of performance and the commitment that results in a "refreezing" of new habit patterns and subsequent utilization of the new area of performance. These types of learning activities usually include opportunities for the learner to practice the new area of performance in settings similar to actual performance. Examples include role-playing and computer-based simulation of diagnostic procedures.

The main criterion for the selection and organization of learning activities is the achievement of the specific educational objectives that were selected as of high priority. This fitting of activities to objectives should take into account both the content that is being learned and the behavior of the learner that is to be changed[56, pp. 28-30]. When a problem-solving approach is used in which basic and applied science information is integrated with clinical procedures, it is more likely that the objectives will be attained, and that the learner will be actively engaged in activities that are seen as relevant and that provide intrinsic incentives[40, p. 126; 48, p. 46].

Another criterion is the fit between learning activities and the learner's preferences and style of learning. Some adults strongly prefer to encounter a highly structured presentation by an acknowledged authority, such as a recorded lecture on a tape cassette. Some other adults strongly prefer a less structured way of exploring the same content, such as an informal discussion with knowledgeable peers. If each has available materials and activities that fit his preferences, it is likely that their motivation and the learning outcomes of both will be greater.

## Evaluation

The remaining component of the mentor role is evaluation. This is the process by which persons associated with the educational activity make judgments about effectiveness based on evidence in ways that encourage use of the conclusions to improve the educational activity. In self-directed education, these judgments are made by the learner himself and sometimes by those who try to facilitate his efforts. The main type of judgment is a comparison between expectations and performance. For example, how close did the expected outcomes of an observational visit to a clinic correspond to the actual outcomes? Or, how well did the visit with the consultant measure up to expectations? In general, evaluation consists of a monitoring or continuing diagnosis of the educational activity to identify unsatisfactory aspects that can be improved, and to identify satisfactory aspects as a source of encouragement to continue. Further evaluation related to the unsatisfactory aspects can indicate in greater detail how to improve the activity. Assessment methods such as Goal Attainment Scaling allow both program evaluation and immediate feedback to participants[34]. The following questions illustrate the aspects of the educational activity that might be the focus of evaluation. Was the scope of the educational objectives too broad, too narrow, or just about right? Did the gaps that were identified turn out to be among those with the highest priority? Were the learning activities planned so that they fit well with other commitments and personal preferences? Were the benefits of the continuing education activity worth the investment of time, money, and effort?

## "Linkage-Agent" Role

In practice, if someone with regional staff-development responsibility wants to facilitate the efforts of a professional to perform the mentor role in order to guide his continuing education in a self-directed way, the facilitative tasks of the regional staff member should be responsive to the specific ways in which the professional performs the mentor role. Some facilitative tasks occur before the encounter with the health professional and some occur during the time period when the professional is pursuing a specific goal. The activities of both the professional who is continuing his education and the regional staff member who is trying to assist will vary from instance to instance, depending on the background of the professional and the educational goal he pursues. A central purpose of the regional staff member should be to facilitate the efforts of the professional to alternate between action problems and knowledge resources. The following list illustrates the *types of activities* in which the professional and the regional staff member who performs the *"linkage-agent" role* might engage, as they interact.

(1) The professional becomes aware of an unsettling trend in his clinical practice, such as a high proportion of his patients who do not follow a recommended therapeutic procedure.

(2) In discussing this unsettling trend with a "linkage agent" who is engaged in the development of health manpower in the region, the professional concludes that the problem seems to be one of the most urgent ones that confront him and his patients.

(3) The professional decides to keep more careful records on this action problem to be able to more precisely describe the problem and his professional practice related to it.

(4) The "linkage agent" identifies other professionals with similar concerns about the action problem, and arranges for all of them to meet together to discuss the problem and their typical approach to it. This could occur in a hospital setting or in relation to local professional association activities.

(5) The "linkage agent" agrees to assemble information about the ways in which some especially able practitioners deal with the action problem.

(6) The professional identifies the gap between his actual present performance and the standard of excellence reflected in the performance of the especially able practitioners. The concurrence by the other professionals who share his concern provides some reassurance that the gap is a worthwhile focus for his efforts.

(7) The professional and his peers discuss the major influences that relate to the action problem, as a basis for deciding on the available knowledge resources and other factors in the setting that should be taken into account.

(8) The professional discusses with the "linkage agent" the importance of the action problem and the extent to which other professionals have substantially improved their performance, as a basis for deciding on the relative priority to give to closing the gap.

(9) The "linkage agent" arranges to help the professional to assemble some information about the action problem.

(10) The professional decides to change his practice regarding the action problem so that it is more similar to the standard of excellence. He reads about the problem area and talks with some practitioners whose practices related to the action problem are similar to the standard of excellence.

(11) The professional decides to try the new practice and to keep careful records regarding the results.

(12) The professional reviews his records related to the action problem to be reassured whether the new practice is more effective or to make further modifications if it is not.

The foregoing part of this chapter has presented an approach to the mentor role that includes the interrelated components dealing with needs, setting objectives, activities and evaluation. This mentor role is performed by the self-directed learner for himself. The components also provide the basis for activities by persons who perform the "linkage-agent" role who aim to facilitate the continuing education efforts of health professionals. The next part of the chapter presents examples of ways in which this approach can be used in life-long self-directed education.

## PART THREE: THE SELF-DIRECTED LEARNER IN ACTION

The foregoing model of the mentor role can be used in various ways by persons associated with the health sciences to facilitate life-ling self-directed education. This part describes and illustrates six major ways in which the model can be used. The examples have been drawn from the health fields. The six applications of the model relate to need-appraisal procedures, specification of objectives, learning activities, evaluation procedures, study of continuing education as it is related to professional practice and facilitation of utilization of educational resources.

### Need-Appraisal Procedures

Each professional has some concept of his needs for continuing education. This concept is implicit in the choices he makes, such as to read one journal article and not another, and to attend one session at a professional meeting and not another. Even the practitioner who does not engage in any continuing education activities reflects his implicit appraisal of his needs for increased competence in comparison with alternative uses of his time, money and effort. The professional who depends on participation in formal continuing education programs can deal with his educational needs at an implicit level by participating in programs that intuitively seem to meet his needs. However, the professional who is more self-directed in his continuing education must deal with need appraisal procedures in more explicit ways. The *purpose of this section* is to describe some *procedures* that a professional can use to delimit the scope of his need-appraisal effort, to collect data about actual and criterion behavior, to analyze data in order to identify the major gaps or needs, and to recognize how to use the conclusions as a foundation for his continuing education efforts. Because some parts of the need-appraisal process depend on data collected from persons other than the professional himself, persons who perform the "linkage agent" role can be especially useful in relation to the need-appraisal component of self-directed education.

Because educational needs have some connection with most aspects of a person's professional activities, it is necessary to *delimit the scope* of the need-appraisal process if it is to be manageable. Otherwise the costs would be greater than the benefits. The usual way has been to select the major and emerging areas of practice in which the professional is engaged. In part, this selection reflects trends in the individual's career, such as the development of a new specialization or the assumption of administrative responsibilities. The selection should also emphasize the areas of practice in which the professional spends the most time. The selection can also take into account the number of patients who are served in each area of practice, the seriousness of the health problem that they confront, and the amount of disruption that the health problem causes in their lives and in the lives of other people associated with them[62]. There are three main ways in which other people can assist the professional to delimit the scope of his periodic appraisal of his needs for continuing education. One is to provide an overview of the need-appraisal process so he selects procedures that serve his purpose well. Another is to provide a guide for the collection of data for an accurate description of his current practice[43, p. 11]. The third is the provision of community data about the incidence of various health problems, such as is provided by mortality and morbidity statistics, and health agency reports on various categories of health problems.

The *collection of data* about needs includes decisions about the sources of data, the types of data to be collected and the methods of data collection. The main *source* of data about educational needs is the professional himself. Other sources include outstanding practitioners, persons who work closely with the professional, patients and experts. The *types* of data to be collected include descriptions of the *actual* behavior of the professional related to the selected major areas of practice; and descriptions of *criterion* behavior which includes his aspirations, other people's expectations and the behavior of outstanding practitioners. This information typically includes both quantitative data such as amount of time spent or test scores, and qualitative data such as descriptions of procedures and expressions of opinions. Most need-appraisal data is collected by one of four *methods* – health records, survey research, testing and observation. In general, data about the actual behavior of the individual professional is collected from him by means of self-administered inventories, review of his records, and sometimes tests, interviews and observation. Supplementary data can be provided by peers and patients. Data about the aspirations of the individual professional is typically collected from him by survey-research methods such as the questionnaire or interview. Data about the actual behavior of outstanding practitioners to use in describing criterion behavior or forming standards of excellence is usually collected by the same methods as for the comparable data from the individual professional. Another way to prepare a description of criterion behavior is to obtain a consensus from a representative group of peers regarding the behavior that they consider excellent and that can serve as an attainable standard.

The collection of data from *health records* is an especially promising method for the purpose of need-appraisal. To the extent to which the health professional makes a careful record of his clinical practice, including the diagnosis of the problem, the remediation and therapy that is prescribed and followed, and the results that are obtained, the records provide a valuable link pin between practice and education. The health records could provide the basic data from which to reconstruct the essence of clinical practice. Major changes in clinical practice should be reflected in changes in the health records. This is especially so for the physician but could be so for almost any health professional. The health records could also provide the basic reference point for comparison between practice and standards of excellence to use for both need-appraisal and evaluation[40, p. 126; 8, p. 1663-1665]. In actuality, much depends on the accuracy, completeness and comparability of the records that are made[14; 59]. A variety of medical records can be used including patient charts, other hospital records, health office records on patients, and clinical notes. The minimum requirement is that the record include the basic decisions made by the health professional regarding individual patients and the main circumstances surrounding each decision. For purposes of self-directed-education need-appraisal, the professional himself or someone associated with him can review a representative sample of records related to the selected major area of practice, and prepare a description of his typical behavior. To the extent to which the records are adequate and the behaviors readily identifiable, the task of describing typical behavior is relatively straightforward. A caution should be noted. Some of the efforts to conduct a similar review of health records, such as a peer review of hospital records[46], noted inadequacies of records and inconsistencies when independently prepared summaries by qualified peers are compared. However, when the individual professional periodically reviews his own records to describe his own practice in an effort to increase his own competence, one result should be health records that *are* adequate for periodic need-appraisal. Also, the reliability of data collected from records can be increased by the use of standard definitions and forms for data collection.

*Survey research methods* such as the questionnaire and interview have been the methods most frequently used for need-appraisal studies. The self-administered questionnaire, or inventory, is especially applicable for the self-directed learner. The survey instruments for studies of use of professional time[7] and of educational needs and interests[10], contain items that could be included in a self-administered and self-scored inventory. Major sections of the instruments used by Storey and associates[52] could be used in this way. Persons engaged in the development of regional health manpower could in three major ways *facilitate* the efforts of self-directed learners to *appraise their educational needs*. *One* is to provide copies of inventories related to various health fields. A *second* way is to obtain and provide normative data on responses to the inventories that could be used by self-directed learners to interpret their own responses. The *third* is to obtain and provide survey research data to present the perceptions and expectations regarding health care by patients[21], experts, and the types of persons who work closely with the professional.

The *examination* has a long history as a means of quality control for professions, and it is receiving renewed emphasis for that purpose. The use of the exam as a method by which the professional can obtain information about his competencies and needs for continuing is a more recent development[43, pp. 29, 31]. A profile of subscores from an exam can indicate to a professional his current level of knowledge, and a comparison with normative data can enable him to identify the major gaps. Various types of exams have been proposed and used for this purpose. Included are the speciality board certification[25], the challenge exam for relicensure[31, p. 422], the self-assessment exam, and the use of simulated patient problems for the identification of deficiencies in diagnostic procedures[61].

Although it has seldom been used for the purpose of continuing education need-appraisal, *observation* is an applicable method of data collection in some instances. The specific procedures for recording data include anecdotal records, check lists, and rating scales.

Regardless of the *method* of data collection, the purpose of this phase of the need-appraisal process is for the self-directed learner to make explicit his present behavior (knowledge, skill, attitude, performance) and the behavior to which he aspires related to the selected major areas of practice; and to discover how these two categories of behavior are perceived by others. "Linkage agents" can assist by providing instruments that the self-directed learner can use to collect this data from himself and by providing summary information about the performance, expectations and perceptions of others.

The *analysis of data* about educational needs consists of comparisons among four categories of data to discover gaps and discrepancies. Listed below are the basic comparisons for each major area of practice that are made by the self-directed learner to complete the need appraisal process.

(1) *Compare his description of his current behavior with the behavior to which he aspires, to identify the gap as perceived by himself.*

(2) *Compare his description of his current behavior with a description of his current behavior as perceived by others, to enable him to confirm or modify his self-report.*

(3) *Compare the behavior to which he aspires with the comparable behavior of outstanding practitioners, to enable him to discover how excellent his aspirations are.*

(4) *Compare his description of his current behavior with the comparable behavior of outstanding practitioners to enable him to discover the gap that exist in relation to standards of excellence.*

These four comparisons allow the professional to place his performance and aspirations in perspective and to recognize the gaps and discrepancies that are most important for the appraisal of his educational needs. The remaining four comparisons will help the professional to better understand his own educational needs in relation to those of his peers.

(5) *Compare his description of his current behavior with normative information about comparable behavior by his peers, to enable him to discover how typical his behavior is.*

(6) *Compare the behavior to which he aspires with the comparable aspirations by his peers, to enable him to discover how typical his aspirations are.*

(7) *Compare the current behavior of his peers with the behavior to which they aspire, to identify their gap as they perceive it.*

(8) *Compare the current behavior of his peers with the comparable behavior of outstanding practitioners, to identify their gap in relation to standards of excellence.*

In order to *illustrate* some of the ways in which these comparisons might be made as part of the data analysis stage of the need-appraisal process by a self-directed learner, *adaptations of several need-appraisal procedures* are described below.

A powerful procedure for need-appraisal might be termed the *health-care audit.* Although this way to appraise needs has evolved mainly for use with physicians working in hospital settings, the basic procedures can be used with most health professionals in most of the settings in which they work. One of the most complete set of specifications, procedures and forms is available from the Professional Activity Study and the Medical Audit Program (PAS-MAP) of the Commission on Professional and Hospital Activities based in Ann Arbor, Michigan. *A health-care audit has the following features,* most of which could be adapted for the health professional who is not associated with a hospital or similar health facility[20; 8].

(1) *The professional must complete a problem-oriented patient record based on his interaction with the patient*[59]. The content of this record varies among health fields, such as medicine, dentistry, nursing and medical social work. However, to serve as the basis for a health-care audit, each record should be organized around a health problem of a patient and should include information about the symptoms of the problem, situational and personal factors that seem

to be associated with the problem, the diagnosis or explanation of the probable causes of the problem, the plan for remediation, the therapeutic or remedial or patient-management activities that occur and the outcomes or results.

(2) *Priority is usually assigned to some areas of practice in which to concentrate the initial health-care audit*[62; 8]. A typical way is to select those health problems that cause the greatest amount of preventable disability, as reflected in incidence, severity and extent of disruption for the patient and others associated with him.

(3) *The patient records are summarized for ease in storage and retrieval.* If there is a large number of records, such as would occur in most hospital settings, it will be necessary to employ a record librarian or someone comparably skilled in abstracting and modern data-handling methods.

(4) *The person or persons whose continuing education needs are to be appraised, participate in planning and conducting the health-care audit.* This makes sure that the focus of the audit is the professional's own patients and experience, increases the relevance of the activity and commitment to use the results, and minimizes concern about external interference in professional activities. Even when a single practitioner is conducting an audit for himself, it would be helpful for him to arrange for one peer to work with him to plan and conduct the audit. The other member of the "audit committee" can provide experience, perspective and interpretation.

(5) *A crucial task of the audit committee is to agree upon criterion performance.* This criterion performance consists of an attainable ideal or standard against which to judge actual performance by the professional or professionals engaged in need-appraisal. If a large number of persons are engaged in an audit, such as all of the physicians associated with a service of a large hospital, it is well for all of them to serve in rotation as members of the audit committee, because of the great benefits from helping to decide on criterion performance. Review of the patient records of a sample of professionals who are acknowledged as outstanding practitioners can help greatly in arriving at an agreed upon standard that is an attainable ideal.

(6) *The actual performance of the health professional* (or members of the audit committee) *can then be compared with the criterion performance to identify the gap to be narrowed through continuing education.* The professional who has participated in the health-care audit process is far more likely to accept the gap as something to do something about and to have some ideas about what to do about it, than a comparable professional who merely has a deficiency pointed out to him.

(7) *In addition to need-appraisal, the health-care audit has the following benefits.*

   (a) The professional's behaviors for closing the gap to improve patient care can be translated directly into *objectives* for continuing education.

   (b) The behaviors that are needed to close the gap can indicate the relative *emphasis* in the educational activity that should be given to knowledge, skill, attitude or performance.

   (c) The educational objectives are likely to be closely related to improvements in the quality of *patient care.*

   (d) The professionals are likely to be *motivated* to increase their competence when they see anonymous comparisons between their performance and criterion performance.

   (e) The results of a periodic health care audit can help to *evaluate* the impact of continuing education activities.

   (f) The health-care audit can be conducted in almost *any setting* in which health professionals work. Where there is little contact with peers, it may be necessary to provide desciptions of procedures and information on criterion performance.

The most widespread procedure for systematically ascertaining needs for continuing education is the *need-appraisal survey.* As used in many professional fields, it is a survey-research procedure to obtain summary information for planners of formal programs of continuing education. Need and interest surveys have been conducted in various health science fields in recent years, often on a state or regional basis [10]. One statewide survey [11], was conducted in the context of a project designed to demonstrate procedures to help individual health professionals to diagnose and meet their own educational needs [52]. The proposed procedures are especially applicable to self-directed education, and could be associated with any survey by provision of self-administered and self-scored forms, by provision of normative information to interpret the results, and by provision of advisors or peer groups to assist the individual practitioner. *The augmented need-appraisal survey has the following features.*

(1) *The entire process is helped greatly if there is some organizational arrangement through which the professionals who are willing to appraise their educational needs can help plan the process, be encouraged to participate, explore the implications of the findings and receive assistance in using the findings to plan their continuing education activities.* This arrangement for communication and interaction is typically associated with the individual's professional association or society but it could be associated with a university, hospital or regional medical or health program. If a large number of professionals participate, one person from each location or area can serve as a member of an advisory or coordinating committee and he

can also handle distribution and collection of questionnaires and facilitation of use of findings by individual practitioners.

(2) *A representative advisory committee can help with the selection of sections of the questionnaire, adaptation of items and planning of related procedures.* The individual members of the committee can be considered "faculty members" in a "college of peers." This involvement will typically increase the relevancy and utilization of the survey findings, as well as increase the response rate.

(3) *A self-administered survey questionnaire is completed by the professionals who want to appraise their needs.* When only one or a few professionals participate, the procedures should result in two copies, one for the professional and one without a name attached for the survey coordinator. The completed copy that is retained by the professional should be self-scored so that he can easily analyze the results. The anonymous copy that is sent to the survey coordinator is for use in assembling normative information to provide in summary form to the respondents to use in the interpretation of their own completed copy of the form. If a large number of professionals participate, it may be more efficient to use a computer to analyze the results and to provide a summary of the analysis for each respondent.

(4) *The questionnaire should contain sections on needs and on related characteristics to be used for interpretation of the information about needs.* For example, one inventory of the professional's own continuing education needs contained the following five sections [11, p. 612]

   (a) professional characteristics,
   (b) circumstances of professional practice,
   (c) currently available continuing education opportunities,
   (d) individual perceptions of continuing education needs and
   (e) major patient problems encountered in practice.

(5) *Someone in the role of "linkage agent" or continuing education adviser should talk with each professional who completes the survey questionnaire.* The purpose of these conversations is to assist with interpretation of findings and use of findings to plan the professional's continuing education activities.

(6) *Provision must be made for the preparation of materials for use in the survey.* The materials include the plan for a survey, copies of questionnaire forms, instructions for the completion and analysis of the questionnaires by the practitioner, instructions for the preparation of normative information for interpretation of findings, copies of summaries of normative information and lists of materials for further study that are keyed into the professional's performance on the survey.

A need-appraisal procedure that has recently been implemented in a variety of health fields is the *self-assessment inventory*. This procedure is similar to an examination except that it is self-administered by the professional to diagnose his own knowledge and to some degree competence. There is no passing or failing grade. The professional compares his performance on the inventory with a criterion or normative standard in order to identify his strengths and weaknesses, so that he can plan his continuing education. Most of the inventories have used a large number of objective items such as multiple-choice questions, grouped by major areas of practice within the health specialty [31; 15]. An alternative type of instrument that places greater emphasis on the assessment of clinical judgment is a set of simulated patient-management problems [61]. *The self-assessment inventory has the following features.*

(1) *An inventory is developed to assess basic knowledge in a health-science specialty by an organization that is competent in test construction.* Experts and leaders from a health-science specialty field such as surgery, nursing, or mental health, in which the inventory is to be used to contribute to a pool of test items and in other ways help plan the inventory. Test specialists form the testing organization, such as the National Board of Medical Examiners or Educational Testing Service, do the technical work in the preparation of a balanced and clinically oriented inventory. Most of the items in the inventory deal with topics that are basic or emerging for most practitioners in the specialty. The items are grouped in standard categories within the specialties to allow the scoring of sub-scores.

(2) *The individual professional obtains the inventory materials, completes the set of items and sends the answer sheet to a bonded agency.* The professional's name is separated from an identification number which preserves the anonymity of the professional who completes the inventory. No information about his personal performance is available to any testing organization, professional association, government agency, hospital or university.

(3) *The bonded agency sends the answer sheet with the anonymous identification number to the testing organization for scoring and returns the report on performance to the professional via the bonded agency.* This procedure accumulates normative information about the performance of a large and representative sample of peers in the health specialty. The scoring of the answer sheet and the preparation of the report on performance is handled by a computer. Only the bonded agency has both the individual professional's name and number. The report is sent to him in an envelope that he addresses and the envelope is marked confidential.

(4) *The report on performance includes a total score and subscores for each of the categories that indicate the per cent of peers who scored lower than the professional.* The computer also prints out brief interpretations of the performance that fit the profile of scores. This printout enables the professional to use the results diagnostically.
(5) *The set of materials sent to the professional also includes a listing of reference materials.* The list of materials and learning resources are keyed into levels of performance on the inventory so that the professional can increase his knowledge on topics for which he recognizes a need for increased understanding and competence.
(6) *A short form of the inventory could be scored by the individual, as long as a set of norms had been prepared.*
(7) *Summary information could be used by sponsors of continuing education programs to guide program development.*

Regardless of the procedures that are used to collect and analyze data about continuing education needs, the main criterion of effectiveness of the procedures is the *utilization of results.* Need-appraisal procedures with the following characteristics should effectively contribute to utilization for program development.

(1) Flexibility that allows the individual practitioner to focus his need-appraisal on his priority areas of clinical practice.
(2) Availability of other persons to discuss the need-appraisal procedures with the practitioner, including rationale, results, planning and implementation.
(3) Production of a description of the practitioner's actual current behaviors in the selected areas of practice.
(4) Provision of descriptions of criterion behaviors or attainable standards, based on normative data about peers, performance of highly competent practitioners or consensus regarding excellent practice.
(5) Comparison of current performance with criterion performance to identify gaps as a basis for selection of objectives for continuing education.
(6) Arrangements that preserve the anonymity of the individual practitioner and minimize threat and defensiveness.
(7) Provision of information about learning resources to increase competence that are keyed into the gaps that are identified.
(8) Repetition of need-appraisal procedures to provide continuing diagnosis and evaluation.

## Specification of Objectives

The professional who is engaged in self-directed education is forced to select some objectives for increased competence and to disregard many others. Most health professionals confront an almost overwhelming number of problems and opportunities that call for increased competence. Even if the individual professional attends only to the needs for increased competence for which there is a high sense of urgency, the selected needs typically extend far beyond available resources of time, money and energy. The individual is forced to select, if only in the most intuitive and even accidental way. The specification of priorities and selection of objectives can be a more useful process for the self-directed learner if he has a way to conceptualize the process and some procedures so that the continuing education activities that are undertaken will be most beneficial for the effort invested. A basic and widely used way of conceptualizing the process by which educational objectives are specified has been developed by Tyler[56].

Procedures that the self-directed learner can use to set priorities regarding the selection of continuing education objectives can be helpful in several ways in addition to assisting him to select from an overwhelming array of sometimes competing objectives. One way is to help him to avoid overlooking some educational objectives that are exceedingly important to him but that may not otherwise be sufficiently evident to be considered. For example, learning an attractive new medical procedure may be more easily considered as an educational objective than improving a basic patient-management procedure which could be far more beneficial to a large number of patients and to the professional's practice. Another way in which more explicit objective-setting procedures can be helpful is improving the fit between the needs that are identified and the learning activities that are undertaken to meet the needs. A continuing process of reviewing and modifying the relative importance that is assigned to continuing education objectives is one of the best means of assuring the relevance of continuing education and of increasing the application of what is learned. In general, a more explicit process for objective setting can increase the utility of continuing education for the individual and can increase the likelihood that he will learn something he can use.

The objective-setting procedures for self-directed education can be grouped in three phases. The three phases are reviewing *sources* of objectives, applying criteria for *selection* of objectives, and *stating* the selected objectives.

The self-directed learner should consider many of the same sources of objectives that are considered by the planners of formal programs of continuing education. Such planners often depend on popularity of topics and preferences of experts. Topics of continuing education programs which many peers attend are assumed to be meeting a need and can be considered by a professional as possible topics for his own continuing education. Topics which are selected by resource persons in continuing education programs and faculty members in professional schools tend to reflect their view of important developments in the field and should also be considered. Regardless of how satisfactory these two sources of objectives may be for some formal programs of continuing professional education in which a sufficient number of enrollees can be taken as evidence of relevance, they are not sufficient for the self-directed learner. For the professional who guides his own efforts to increase his competence, the educational objectives that are selected should be more specific and personal. *The two main sources of objectives are information related to the health and illness of his patients and information related to his own career.*

The basic information about *patients* results from the need-appraisal process in which gaps are identified between the professional's actual current behavior and criterion behavior. The sources of this information include analysis of practice such as the health-care audit, health statistics such as hospital records, and expert opinion. These sources of objectives related to the improvement of patient care and health maintenance tend to be closely associated with the professional's current occupational activities.

The self-directed learner should also examine his own *career* as a source of objectives. One function of continuing education is the enrichment of professional careers. If current professional practice was the only source of objectives, the resulting continuing education activities would be too narrowly prescribed in scope and in time. Most professionals are specialists and run the risk of overspecialization to the point that they lose perspective on their professional role within the larger context of themselves as a human being[29, p. 573]. Even within the professional field, a greater understanding of related specializations helps the professional to restructure concepts instead of just adding bits of information[48; 29, p. 567]. This is especially important for the most innovative professionals. An exclusive concentration on current practice is restrictive because careers develop and emerge. Two types of information can help the professional to select continuing education objectives related to his own career. One type is information about the individual's own aspirations. Another is information about developmental trends in the career cycle of other health professionals. An example of an emerging need is the mid-career assumption of administrative responsibility by many professionals. Information about career aspirations and career cycle constitutes a valuable and neglected source of objectives for continuing education. These types of objectives related to career enrichment are pertinent to both occupational education and liberal education for professionals.

*Most professionals confront a large number of potential objectives and they are more likely to select some that have high priority for them if they have some criteria to use.* Two types of criteria that have been useful for screening educational objectives relate to desirability and feasibility. Three of the criteria related to desirability are the extent of the health program, the size of the behavioral gap and emerging career directions. Three of the criteria related to feasibility are realistic objectives, available resources and professional commitment.

*One desirability criterion is the extent of the health problems that confront the patients whom professionals seek to serve.* Some health problems are more major than others, and improvements in practice related to the more major problems would be expected to be of greater benefit to the individual patient and to society than comparable improvements related to more minor health problems. Three indicators of the relative extent of health problems have been proposed[62]. They are, how many people are affected by the health problem, how much disability do they experience, and how much social disruption is entailed?

*A second desirability criterion is the size of the gap between the professional's actual current behavior and the standard of criterion behavior.* This is perhaps the most important criterion and the basic information about it should result from the need-appraisal process. If this process is especially effective, it will not only identify the larger gaps but also provide sufficiently detailed descriptions of current and criterion behavior to be able to state objectives as specific changes in behavior that are needed to close the gaps.

*The third desirability criterion is the professional's emerging career directions.* The career cycle of most professionals shifts periodically, such as toward greater specialization, or toward more administrative responsibility, or toward the integration of several specialties. It would seem well to place more emphasis on educational needs related to aspects of the career that are emerging than to aspects that are being phased out.

*One feasibility criterion is the extent to which the objective can realistically be achieved by the professional.* There are various ways in which predictions can be made about the likelihood that the professional can change his behavior and achieve the objective. Persons who are familiar with continuing education might advise the professional about how likely he is to be able to achieve the objective. The professional can make an estimate for himself by comparing the characteristics of his peers who already meet the standard with the characteristics of his peers who do not.

*A second feasibility criterion is the availability of resources to help close the gap.* Examples of educational resources include resource persons such as consultants, advisers, specialists, professors and "linkage agents"; and educational materials such as journal articles, text books, film strips, audio tapes and computer-based education lessons. More emphasis might be placed on objectives for which pertinent educational resources are already available than upon objectives for which few resources are available.

*The third feasibility criterion is the level of the professional's own commitment to achieve the objective.* With such a commitment to change, a professional is far more likely to follow through and achieve an educational objective and use the increased competence in professional practice. Without such a commitment, even an urgent objective might best be postponed until the professional is ready to deal with it, or perhaps the professional might even undertake an educational activity for the purpose of exploring why the objective seems to be of greater urgency for others than for himself.

The final phases in the specification of objectives are the selection of objectives on which to actively work and the stating of them in a form that is most useful for the guidance of learning activities and evaluation. When the self-directed learner applies the selection criteria to the pool of possible objectives, it is likely that a few will rank at the top of the list. It is helpful if the professional then discusses these few high priority objectives for his self-directed education with one or two persons who can help him to reflect on the few objectives that should be selected. Often someone in a role as adviser or a "linkage agent" or mentor can help the professional to explore the pros and cons of each objective, which leads to a more beneficial selection.

The selected objectives should be stated as clearly and as precisely as possible. This can be done by describing the intended behavior at the conclusion of the educational activity which was not present at the beginning. The term "behavior" refers to outcomes that emphasize knowledge, skill and attitudes along with their combination as competence. Each statement of an objective should reflect the subject-matter content with which the objective deals and the type of mastery that the professional should acquire. It makes a big difference if the professional intends to acquire an appreciation of some new clinical procedures or a high level of competence that makes a major difference in patient care.

A well stated set of educational objectives can be a great help to the self-directed learner in two respects. One is to help guide the selection and organization of learning activities that appear to be the most effective way to achieve the objective. The second use is to guide the evaluation efforts by which the professional finds out how well his educational activities are progressing.

## Learning Activities

*A self-directed learner needs a rationale for the selection and organization of learning activities.* A professional typically engages in continuing education in order to change. This is especially so for the self-directed learner who is less likely to engage in an educational program associated with a tour or convention for largely social or political reasons than his less self-directed peers. The anticipated change in behavior sometimes emphasizes increased knowledge, improved skill, or changed attitudes but more often the objective is a combination of all three in the form of more effective performance.

Almost any change in behavior results from a dynamic interaction between the individual and conditions in the environment that facilitate the changed behavior. Many of the daily activities in which a professional engages serve to reinforce existing behavior or have little influence on his behavior. By contrast, some activities have a greater likelihood to produce changed behavior. When such activities are engaged in for the purpose of changed behavior they are called learning activities. Thus, if a practitioner actively prepares problem-oriented health records that describe his interaction with his patients and periodically reviews the records of patients who have a common health problem in an effort to improve his diagnostic procedures, he is engaged in learning activity. However, if he passively attends a lecture on a health topic from which he seeks nothing new, he is not engaged in learning activity. Especially in the context of this chapter on self-directed education, the term "learning activity" refers to an active search for changed behavior on the part of the learner, not to what a teacher does.

Some self-directed learners intuitively make the major decisions about learning activities. However, efforts to encourage a larger proportion of professionals to be more self-directed in the ways in which they continue their education should help to make these major decisions more explicit. ***Decisions about learning activities cluster around four themes – acceptance of responsibility for self-directed education, recognition of the range of learning activities from which to select, selection of the learning activities that seem best in a specific instance and organizing the learning activities most effectively.*** "Linkage agents" engaged in the development of regional health manpower should recognize the main conditions of effective learning by professionals so that they can facilitate self-directed continuing education.

Initiative or *self-directedness* in continuing professional education is similar to self-directedness in one's occupation or in any other domain. It depends on the degree of self-discipline The self-directed learner is one who has a sense of direction and some basic coping and inquiry skills, and who can work somewhat independently. He has some strategies for facilitating specified behavioral changes, and for seeking and accepting assistance when needed. He may engage in a formal continuing education course to alert himself to new directions or to efficiently achieve a specific educational objective that he has identified. However, his self-directedness is reflected in his selection of objectives that have high priority, followed by his selection from a range of learning activities those that are most appropriate for the specific circumstances he confronts [26; 38] . Persons who seek to facilitate self-directed continuing professional education should recognize those practitioners who are prepared to accept the primary responsibility for increasing their competence, should respect and encourage their autonomy as learners, and should make available educational resources and resource persons who can provide consultation, help with planning and in general assist the professionals to identify and meet their major educational needs.

The professional who recognizes the range of learning activities from which he can select, is more likely to make wise selections than a professional who is aware of only a few ways in which he can continue his education. A specific learning activity typically reflects both the learning methods that are used and the generalized influence of the sponsor or other persons who are associated with the activity. Sponsors subtly influence the relative emphasis in a learning activity on either solving action problems or using knowledge resources. For instance, university-sponsored postgraduate courses tend to emphasize the transmission of knowledge by experts, regardless of whether the courses occur in a lecture hall, over television, by correspondence study at home or at a residential retreat. Continuing education programs sponsored by university-related hospitals tend to be similar with their emphasis on specialization and indepth study. By contrast, voluntary health agencies and state health departments tend to emphasize the solution of widespread health problems. Many of the community hospitals that have assumed responsibility for continuing professional education have emphasized improvement of widespread professional practices, by use of methods such as the health audit. Recent listings of opportunities for formal programs of continuing medical education show about one half of them sponsored by universities and about one fifth of them sponsored by hospitals, most of which are university-related. Professional associations often cosponsor continuing education programs in addition to their own meetings and journals. The question has even been raised about the influence of extensive pharmaceutical company advertising on the educational impact of health-related professional journals [32] . Learning activities are especially valuable when they assist the participants to relate action problems and knowledge resources. Cosponsorship can increase the attention to this relationship. The important task for the self-directed learner in this regard is to select activities and settings that are likely to push him in a direction he wants to go[55].

The self-directed learner could conceivably achieve almost any educational objective by almost any type of learning activity. If the objective is the acquisition of knowledge, he could read about it, listen to an audio tape, discuss it with peers or receive detailed advice from a consultant, and as a result achieve the same objective. The question is, which one does it best for him? In addition to emphasis on application and method of learning, there are other dimensions of learning activities that should be taken into account by the self-directed learner as he selects learning activities. Listed below are the main *criteria* that should be considered as the basis for deciding in which learning activities to engage[56, pp. 42-44].

(1) There is high congruence between the content of the learning activity and the behavioral change that was stated in the high-priority objectives which were selected.

(2) There is substantial opportunity to practice the behaviors and to deal with examples that are relevant to the selected objectives.

(3) The learner prefers the relative emphasis on acquisition of knowledge compared with application in action settings.

(4) The level of sophistication of the learning activity is within a range in which the learner is neither overwhelmed nor bored.

(5) The methods of learning that are used are preferred by the learner and contribute to contined motivation to learn and search for meaning.

(6) There is sufficient flexibility to adjust to pacing problems if they arise and to provide for supplementary assistance if it is needed.

Almost all learning activities have some applicability to life-long self-directed education. However, *there are some types of activities that are especially useful for the self-directed learner.* Because there are so many methods of learning, they have been grouped below in five categories. Each category contains a brief overview of the types of activities that are included in the category, followed by a more detailed description of one type of learning activity that is especially pertinent to self-directed education. The five categories are print media, electronic media, informal group, formal group and tutorial.

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During the past century, the most familiar activity for self-directed continuing professional education has been reading. The *print media* in all forms has been assumed to be the basic educational resource available to the practicing professional [29; 60]. It is assumed that the dedicated professional subscribes to and reads his journals, maintains a core library of basic reference books in his office and study, and consults major medical and health libraries in the hospital or university when needed. In practice, some busy practitioners are so overwhelmed by the amount of printed material available that they are unable to sustain any systematic program of professional reading. A few do little professional reading beyond the flyers that pharmaceutical companies send with their samples. In addition to the great amount of printed materials that may overwhelm the professional, most of the articles and chapters deal with new developments and ideas that are several steps removed from daily practice. Most professionals have difficulty applying their professional literature to their clinical decision making.

There are several ways in which printed materials can be more directly related to clinical practice. One is home study or correspondence study in which someone selects printed materials that relate to an action problem of clinical practice, and prepares a syllabus to guide the learner. There may or may not be someone who corresponds with the learner during the time period in which he is studying the home study course. A similar arrangement is the preparation of self-contained study modules on clinical topics [48, pp. 133-137]. Each of these learning methods allows the learners to select a topic of immediate practical interest to him and to efficiently review the available information that relates to it. The effort to prepare an effective study module can be justified because it is used thousands of times [52, pp. 31-33]. The applicability of the module is increased to the extent to which it simulates the decision-making process in which the professional will use the new information, instead of consisting mainly of a listing of new information. The retention and utilization of what is read can be increased further by the use of questions to accompany the materials. The questions encourage the reader to reflect on and evaluate what he has read. Such questions can also suggest to the professional the types of questions that he might pose for himself when he reads other professional literature[22; 1].

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The *Patient-Management Problem* provides a provocative example of the imaginative use of print media for self-directed continuing education[52, pp. 7-9, 55-57]. *The main features of the Patient-Management Problem, which was designed for use with physicians, are listed below.*

(1) *The Patient-Management Problem (PMP) is a simulated exercise* prepared for the AMA Department of Postgraduate Programs and was designed by John W. Williamson. It provides a relatively realistic framework in which a practicing physician can make a series of clinical decisions, and then compare his decisions with those of a panel of experts.

(2) The professional first reads the *set of instructions* that explain the procedures that he should follow to administer the PMP simulation to himself. The instructions include the admonition that he assume that the patient has a single disease and that the physician should restrict his patient-management decisions to the problem described and avoid a complete diagnostic work up.

(3) He then reads a *brief description of a specific patient*, his health problem, and the information obtained by the nurse when the patient arrived.

(4) In Part One, the professional lists and rank orders the six *medical conditions* he would check initially.

(5) In Parts Two and Three, the professional lists in the sequence in which he would proceed, types of *data he would seek* on the first office visit. The data includes case history and physical exam/office procedures. He then erases the corresponding spaces to reveal the data he would obtain.

(6) In Part Four, the professional lists and rank orders his *hypotheses* regarding the health problem, on the basis of the data thus far.

(7) In Parts Five and Six, the professional lists in chronological order the *laboratory studies* to test the above hypotheses, and then erases the corresponding spaces to reveal the data he would obtain.

(8) In Part Seven, the professional lists in order of probability the one or two *conditions* that most likely account for the patient's trouble,

along with mention of associated conditions that will influence treatment.

(9) In Parts Eight and Nine the professional indicates the essential and helpful *therapeutic measures* he would consider and then erases the corresponding spaces.

(10) In Part Ten, the professional indicates his *follow-up* on the case.

(11) The professional next consults the Key which is based on the *responses of a panel of experts* on the disease who perform a faculty role and provide a standard against which the professional can compare his own performance.

(12) For each item on which the professional's decision differed from the panel, the professional can refer to the accompanying Item Commentary for the *rationale used by the panel members* and to documentary *references from the latest literature* on the subject. The professional's further reading can then be very specific and selective.

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During the past quarter century, a variety of *electronic media* have become available for use in education. As each has been introduced there has been a wave of enthusiasm and anticipation. In a few years each has taken its place as one of the resources to be used as needed. The typical constraint on more extensive use has been the lack of high quality educational materials to use with the hardware. The electronic-media category includes radio, television (especially closed circuit), single-concept films, dial access information retrieval, communication networks using telephone lines, videotaping of performance for analysis, audiotape cassettes and computer-assisted instruction. Especially for health professionals who practice some distance from a medical center, an arrangement such as the Medical Information Service via Telephone (MIST) allows a physician in rural Alabama, for example, to call on the MIST circuit from any place at any time toll-free and obtain split-second access to specialists at the University of Alabama in Birmingham from whom they receive information about the latest and best treatment for a variety of medical problems. A similar project in Missouri provides an Automated Physicians Assistant for a small-town general practitioner. Computer terminals and telephone lines connect the automated physical examination equipment in the physician's office with the computer at the University of Missouri in Columbia and with the Medical School's specialists. The computer stores and analyzes the data, specialists help to interpret the results, and a standardized patient record is stored for future retrieval[41].

The PLATO system of computer based education at the University of Illinois is a recent development that is just beginning to be used for continuing education of health professionals[5]. The developmental stage of the system is shifting to a demonstration stage in which it is being used for instruction in various fields including health sciences, such as nursing, veterinary medicine and medicine. The system can be used for anonymous self-assessment, or for the collection, storage, and analysis of health history data collected directly from the patient and efficiently presented to the health professional. The following example illustrates its use for direct instruction.

*The main features of the PLATO system as it can be used for mastery learning in continuing education for health professionals are listed below.*

(1) *A health professional decides that there are some topics he would like to review and learn more about, and he goes to a PLATO IV console located in a university or a hospital.* The console is a square cabinet that sits on a table, has a plasma display panel in the front and a typewriter keyboard below it. The console is connected by telephone lines to a large computer, which may be hundreds of miles away. The professional selects the lesson on which he wants to begin; the lesson may run for ten minutes or as long as several hours.

(2) *A great deal of work was required to make an effective one-hour lesson available.* In addition to the development of a very powerful and flexible hardware system, many supporting computer programs were prepared so that authors can prepare the lessons themselves by use of the TUTOR computer language and learners can use their natural language at the keyboard for questions and responses. Even with misspelling, the supporting computer programs will interpret and use the input.

(3) *An author prepared the lesson.* In his selection of the topic and his way of writing it, he took into account such considerations as (a) the importance of the topic, (b) the use of simulation or other procedures that utilize the potential of computer-based education, (c) the extensive and continuous feedback to the learner of information about how well he is performing, (d) a high degree of learner control and individualization regarding pacing and emphasis, (e) the selection of objectives and content in which maximum mastery and minimum failure are important, and (f) the selection of a topic that is difficult to teach otherwise.

(4) *In the preparation of the PLATO lesson, the author made decisions about content and about the way in which the computer program would operate.*

(5) *The professional selects the lesson from those currently available* and uses the keyboard to store in the memory of the computer some information including the name of the lesson and his own name.

(6) Instantly the *computer presents* on the plasma display panel of the PLATO IV console some brief *information about the lesson* and instructions for the next step by the learner.

(7) Assuming that the lesson deals with a clinical health problem, such as diagnosis of unusual heart sounds, the lesson would present on the display panel a *detailed diagram of the chest area.*

(8) The professional is instructed to place his *finger* on the *display panel* at the location where he would place his *stethoscope* on a *live patient.* The touch panel frame surrounding the display activates a random access audio device which transmits the heart sound that corresponds to what he should hear if he placed his stethoscope at the location touched.

(9) The professional *repeats the process* until he decides on the *optimal location* from which to listen and the probable cause of the unusual heart sound.

(10) *The professional then indicates his diagnosis.* If his conclusion is the same as that of a panel of experts, his decision is confirmed with a brief explanation and he proceeds to the next part of the lesson. If his conclusion is not correct, he receives instant feedback and suggestions about how to proceed. This process is continued until the process and underlying concepts are mastered. He then proceeds to the next part of the lesson, which is selected in part on the basis of his previous performance in the lesson.

(11) The professional is presented with *related knowledge in small amounts that are specifically connected with the simulated clinical procedure.*

(12) The console has the capacity to rear-project microfiche *color slides* onto the display panel instead of or along with the regular text and diagrams.

(13) The computer can *accumulate data,* such as problem oriented health records from a series of simulated patients with similar health problems, to allow the professional to discover regularities and trends.

(14) The computer can also keep a *record of learner responses* and decisions. An analysis of this response data can be used to identify characteristic learning strategies. Professionals with ineffective learning strategies might then receive assistance in adopting a learning strategy which for many people is more effective and thereby learn how to learn better.

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The long standing means by which professionals have endeavored to continue their education has been *informal contact with peers* [29, p. 572].

This is the origin of the professional association. A recently publicized manifestation is the "invisible college" that some researchers and scholars create, which consists of an informal interpersonal network of peers with similar or complementary interests who may be anywhere in the world but who exchange their writings often at draft stages and who sometimes meet together to discuss emerging topics of mutual interest.

There are various ways in which such informal groups can become more potent forces for life-long self-directed education. The most important way is for the individual professional to recognize that such an interpersonal network can be a valuable resource for life-long learning [55; 44, pp. 44 ff]. Another way is to formalize arrangements for a consultant service in the health fields so that the individual practitioner has easy access to an expert who can provide assistance on a specific professional problem that he confronts. After a number of successful encounters, a professional is likely to augment his own informal interpersonal network of peers which is similar to the network with whom many professionals interact to test new ideas and seek reassurance. Another way is to travel and visit other professionals in the region. An indepth exposure to a new practice and the people who are using it is a powerful stimulant to professional growth. Some professional associations have tried to encourage this type of interchange by including as a part of their meeting or association activity, a living case study in which a member who is using an innovative practice allows some of his peers to become very familiar with the practice and the factors related to it.

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The *learning exchange* provides an example of a way in which a professional can develop and utilize an informal interpersonal network of peers as a vehicle for continuing his education. It has been used in some communities for the entire range of topics in which adults are interested and could be adapted for health professionals. *The main features of the learning exchange as it can be used for self-directed education are listed below.*

1. Someone in a region agrees to *coordinate* the learning exchange, and to provide an address, a phone number and clerical assistance to process the information.
2. A *professional* who is interested in extending his network of peers for continuing education *completes a file card* for the exchange that contains sections on interest topics; on whether he wants to give consultation, receive consultation or discuss each selected topic with peers; and on brief background information about the professional, including address and phone number.
3. A *clerk* at the learning exchange *matches cards* on each topic and notifies the professionals who have complementary interests in each topic.

(4) It is up to the *professionals* who are thus notified to *contact each other* and make all arrangements regarding time and place of meeting and fee if any. The exchange conducts no educational activities, only brings together professionals who want to do so on their own.

(5) The *exchange* periodically prepares a *listing of topics* that have been requested to help professionals identify topics on which they may be interested.

(6) The *exchange* maintains a *listing of places* where participants may meet, such as hospital conference rooms, for people who do not want to meet in homes or offices.

(7) One function of the sponsor of the exchange is to let health professionals *know about the exchange* so that they can use it if they want to.

(8) The *cost* of the exchange is very *small* and can be covered by some office in the region concerned with the development of health manpower, without any charge to those who participate.

(9) The learning *exchange* could also maintain a *file* of more *formal opportunities* for continuing education to assist participants in finding out about them.

(10) One of the main benefits of the learning exchange is that it *brings together* the more self-directed learners in a field to explore topics of mutual interest which they would prefer to explore with peers.

(11) Especially for health professionals who practice in *isolation* from peers in the same specialty, such an interpersonal network provides some of the *interaction* that tends to occur in group practice or in clinic settings.

(12) The exchange makes it easy for a professional to make an *initial exploration* of a topic with little risk, which he may later decide to study in greater depth in some other way.

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An increasing proportion of health professionals are closely associated with a *formal health-related organization* such as a hospital, clinic, group practice, or health center. In such organizational settings, professionals perform interdependent roles and have a stake in the performance of their associates. Some of the continuing education procedures that are used in organizational settings constitute an approach called organization development[2; 3; 4; 47]. Such procedures are concerned with both increased competence of individuals and greater vitality, productivity, and effectiveness of the organization. One advantage of the formal organizational group for continuing education is that the shared learning experience increases the likelihood that new competencies will be applied in practice.

Some personnel-development efforts in organizational settings focus mainly on increased performance such as improved patient care. For example, an inservice educational program for the nurses on one floor of a hospital might be conducted in response to the finding that some established procedures were not being adequately followed. Other organization-development programs deal with the relation between individual effectiveness and organizational effectiveness [6] . For example, health professionals with administrative responsibility may participate in a "Grid Seminar" by using a "do-it-yourself organizational-development kit." Participants compare their relative emphasis on productivity and people, with organizational expectations. Discussion of leadership style includes problem solving and communications, but the emphasis is on learning from experience and application. Still other continuing education programs concerned with performance in organizational settings focus mainly on personal development [50] . For example, a group of ten health professionals may meet together for a series of ninety-minute sessions on improving interpersonal effectiveness. Each session begins with an audiotape introduction followed by discussion and activities designed to help each participant better understand his feelings and those of others, and to facilitate the development of a learning community in the organization, which will foster personal growth.

In many continuing education self-help groups without paid leadership, the emphasis is on learning from direct experience and personal knowledge [45] . Each individual participant assumes personal responsibility for working on the solution of a problem that he is not presently able to solve. The other group members provide concern and support for the individual and sometimes their interactions are part of the content to be studied. Sometimes the individual engages in a self-audit.

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The health-care audit provides an example of self-directed continuing education in an organizational setting. The early stages of a health-care audit can be part of need-appraisal and can be repeated for periodic evaluation. The latter stages of an audit can provide powerful learning activities that can be directly reflected in improvements in patient care [8] . *The main features of the health-care audit as it is used for self-directed education are listed below.*

(1) The *professionals* who engage in a self-audit help to *assemble information* about attainable standards of excellent professional performance.

(2) They then anonymously *compare the standards with their own behavior,* with a sharing of summary information regarding the gaps that exist between actual and desirable performance.

(3) The *professionals* themselves *identify the gaps* that most need to be narrowed.

(4) The educational *objectives* are the descriptions of the *behaviors* that need *to be acquired* in order to narrow the gaps.

(5) The *organization*, such as a hospital, can help by *arranging for the time, facilities, and materials* for the professionals to practice the desirable behavior.

(6) These *learning activities* can be solitary or they may be with other participants in the health-care audit.

(7) Some of the *audit procedures can be repeated* periodically as a way to review progress.

(8) The participants are able to use this *feedback* to shift the topics and emphasis as needed.

(9) The audit procedures provide a very specific and *clinical focus* for related educational activities.

(10) The participation by all of the professionals in a work setting in a health-care audit provides strong *encouragement* for continuing education for those who are *least active* in the more formal kinds of continuing education.

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Many self-directed study arrangements in both preparatory and continuing education entail someone other than the learner who performs parts of the mentor role and engages in some kind of tutorial relationship. Some of the recent "university without walls" arrangements for undergraduate independent study that does not entail supervision by regular faculty members have indicated the importance of having someone to help with such aspects of the mentor role as guiding plans, supervising study activities and providing for quality control[37]. Some type of counsel is important because of the difficulty that most people have in monitoring their own behavior. Another function of a "linkage agent" who provides some counsel and monitoring is to alert the professional to learning resources that he may not know about. An arrangement that contributes to a mutually satisfactory tutorial relationship is the "contract" that formalizes the agreement regarding the expectations for each person involved. Some mid-career traineeships include a tutorial relationship along with direct contact with grand rounds in the hospital and "live" clinics[18].

The preceptorship provides an example of the tutorial relationship as a vehicle for life-long self-directed education[16]. The present emphasis, however, is on the value of being the preceptor for the continuing education of the *preceptor*. It has often been observed that one learns more from teaching about a topic than from the usual student role[54]. In addition, the educational value of working with younger men in a profession has long been recognized[42, p. 151]. *The main features of a preceptorship for self-directed education are listed below.*

(1) A preceptorship might be designed to emphasize professional practice with its concern for *alternating between action problems* of clinical practice to promote health maintenance and patient care, *and knowledge resources* that can increase the competence of professionals.

(2) The tutorial relationship may include work in a *community hospital* with its typical range of common health problems and flexible arrangements for preceptorships.

(3) The *student* who works with a preceptor is likely to be a student in *professional school,* but may be an *undergraduate* student who is considering going into the health field, or a new professional during the early years of practice.

(4) After an initial exploration, *the parties* to the tutorial relationship *work out an agreement* or "contract" regarding the educational objectives and procedures of the student and the contributions to be made by the preceptor.

(5) The *student* brings to the tutorial relationship a *recent familiarity with organized knowledge* from college courses, which can alert the preceptor to knowledge resources and procedures that he can pursue further.

(6) The *preceptor* can help the student to develop a feel for the *realities of clinical practice,* as a context in which to interpret and apply what he learns.

(7) All parties to the tutorial relationship can extend their repertorie of effective *strategies for alternating between action problems and knowledge resources.*

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The foregoing five categories of learning activties do not of course include all methods of continuing education and the examples that are provided for each category are but a few of the many ways in which professionals systematically increase their competence. What the examples have in common is their utility for self-directed education. They illustrate the considerations that a health professional might take into account in his selection of one or two types of learning activities that are likely to be most helpful to him, to achieve his objectives, under the circumstances.

After the selection of learning activiites that fit both the objectives and the learner, the remaining step before engaging in the activities is to *organize the learning activities* so that the learner progresses well through them and achieves the objectives. This organizational aspect of the mentor role is as much aesthetic as scientific. In doing so, the self-directed learner should consider both the way in which he prefers to organize the sequence of learning episodes, and the main factors that contribute to effective learning by adults.

Adults vary greatly in their learning style and these variations are partly associated with personality [24; 51]. An individual health professional is likely to learn more effectively and to persist longer in the series of learning episodes if the organization of learning activities fits his preferred learning style. Some learners have a very orderly and explicit and initiatory learning style, some depend heavily on external authorities to set goals and provide structure, still others have an intuitive and almost groping learning style that seems disorderly to others. Because of the great variability in characteristic learning styles, it is well to encourage health professionals to reflect on their previous approaches to learning that have been most satisfactory and satisfying and to incorporate major elements of those approaches in the way in which they organize their own learning activities. There are, however, three principles that might be considered as the self-directed learner makes decisions about the organization of his learning activities so as to optimize progression, application and gratification.

The first principle of organization is *progression* [56, pp. 62-64]. The achievement of educational objectives typically requires persistence in learning activities over a period of time. Persistence is more likely if the learning activities have a sense of coherence and sequence and forward movement, in contrast with brief and unrelated learning episodes. A useful way for the self-directed learner to achieve continuity and persistence and progression in learning activities is to select a theme of personal importance to use as an organizing principle. The prime sources of such themes are those areas of professional practice in which there are major gaps between current performance and the performance toward which the individual aspires.

The second principle of organization is *application*. In continuing professional education, the main reason for behavioral change is to be able to apply the increased competence in the form of improved performance. The likelihood of application is greater if new topics are studied in relation to the context in which they are to be applied. This concern for application is important, regardless of whether the emphasis is on the acquisition of organized knowledge, on improvement of professional action or on interrelationships between knowledge and action. One approach to the organization of learning activities that would seem to be especially pertinent to health professionals parallels the usual process of diagnosis and remediation. With this diagnostic approach, the focus of the educative activity alternates between study of professional practice and study of relevant knowledge. The self-directed learner initiates the series of learning episodes either with the identification of a problem of clinical practice or with information from literature or peers that alerts him to a probable problem of professional practice. This episode is followed by episodes in which the professional studies several areas of organized knowledge that seem to be most useful for a better understanding of the action problem, and then uses the resulting insights to redefine or further specify the problem. With the greater specification of the problem, the professional can proceed to seek information from the literature or from peers or from his own professional health records that suggests alternative solutions to the problem. The specific problem can next be examined as a basis for deciding which solution seems most applicable. Again professional literature and clinical data can be consulted to help develop a detailed course of action to achieve the solution. In the process of implementing the solution, the professional can reflect on progress and make adjustments as called for with a diagnostic problem solving approach to the organization of learning activities. In this way, the professional's continuing search for meaning and understanding alternates between study of the action problem and study of organized knowledge related to the problem.

The third principle of organization is *gratification.* To be sure, if a professional persists in a relevant educational activity, it is likely that he finds the experience gratifying in some way. But in what way? There is mounting evidence that adults who participate in the same continuing education activities do so for some quite different reasons[27; 49; 9; 55]. Although people participate in important activities for multiple reasons, one or perhaps two typically predominate. Some of the dominant reasons are expressive and the benefits to the participant are directly related to the learning activity itself. Examples include interest in the subject-matter content, enjoyment of the learning activity and interaction with other people who are related to it. Some of the dominant reasons are instrumental and the benefits to the individual are realized as he uses the learning outcomes to achieve external purposes. Examples include use of increased competence to achieve a personal goal such as through a career change, and use of increased understanding to help others such as improved health care. The self-directed learner can use this principle to organize learning activities so that they provide a sufficient amount of the types of gratification that are important to him.

The self-directed learner can also contribute to the effectiveness of the learning activities in which he engages, by performing the aspect of the mentor role that takes into account conditions of effective learning. The learner may consider conditions of effective learning when he reviews his learning plan, and also from time to time when he is engaging in the learning act. Listed below are some of the major questions that a health professional might ask himself in order to decide if there are additional ways in which he could modify the *organization of his learning activities so that they are more effective.*

(1) Has he assumed sufficient *responsibility* for the major decisions about his educational needs, priority objectives, content emphasis and type

of learning activities? Effective self-directed education requires active participation by the learner.

(2) Is the organized *knowledge* to be studied *relevant* to the solution of *action* problems? Relevance is sometimes greater when a learning topic includes elements of basic science, applied science and clinical practice.

(3) Does the context in which the learning is to occur sufficiently *resemble the context in which the changed performance will occur?* Great similarity facilitates transfer, application and persistence of the changed behavior.

(4) Is there sufficient provision for *feedback* so that he will receive knowledge of results? Effective procedures for monitoring, evaluation and quality control can contribute both to satisfaction from progress and correction of shortcomings.

(5) Are there sufficient *intrinsic incentives* and satisfactions? If there are not, the pattern of learning activities should be modified or else the learner is likely to withdraw from the learning activities.

(6) Is the physical and social *setting for learning at least minimally conducive to success?* It is sometimes necessary to select a location that is associated with study in which there are few distractions, and to terminate a study period when learning effectiveness begins to drop.

(7) Have crucial external *educational resources* been utilized? Sometimes even the most autonomous learner must use people and materials to assess needs, set priority objectives, confront new ideas and practices, and evaluate practice.

Even though the self-directed learner continues his education in highly individualized ways, the use of the foregoing concepts about educational design should enable him to guide his educational activities so that they are more effective and satisfying.

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Listed below are a dozen ways in which a "linkage agent" engaged in the development of regional health manpower can facilitate the efforts of professionals to more effectively select and organize learning activities for themselves.

(1) Help health professionals in the region to become more familiar with the rationale and procedures for being more self-directed in the ways in which they plan and guide their learning activities.

(2) Increase the awareness of health professionals regarding the range of available methods for self-directed study.

(3) Provide information to help practitioners locate peers and experts who could serve as educational resources, through such arrangements as a learning exchange or a consultant service.
(4) Help to arrange for preceptorships.
(5) Organize retrieval procedures to assist practitioners to locate materials that they could use to continue their education.
(6) Select printed materials, organize them and provide study and review questions, and make the resulting pamphlets readily available so that health professionals who want a brief review of a topic can efficiently obtain it by reading the pamphlet.
(7) Encourage appropriate organizations to develop new materials and delivery systems for self-directed continuing professional education, such as tape cassettes, correspondence courses, single concept films and computer-based education.
(8) Create new educational materials when they are badly needed and no one else does so.
(9) Encourage community hospitals and other organizations with which health professionals are associated to assume responsibility for organization development and other programs to encourage continuing education.
(10) Publicize procedures for a health-care audit.
(11) Assist with the development of standards of excellence for health professionals, based on normative data and the performance of outstanding practitioners.
(12) Prepare and disseminate case studies about health professionals who are particularly active and effective in continuing their education in self-directed ways.

## Evaluation Procedures

Self-directedness in most activities requires objectives and conviction and effort and *evaluation.* Without feedback from evaluation the individual has difficulty knowing whether or not he's making progress. Knowledge about progress encourages perseverence. Knowledge about inadequate progress provides the basis for making changes to improve progress. To evaluate progress it is helpful to know where you are and where you're going and to have some standards by which to judge whether the changes that occur constitute adequate progress. This applies especially to the function of evaluation in self-directed continuing professional education.

*Evaluation consists mainly of two activities, describing and judging.* The health professional who wants to evaluate his continuing education might prepare three descriptions. One is of the *current* characteristics of his educational activity. A second description is of the *intentions* regarding his educational activity. The third is of the *standards* that are useful to interpret any disparities between intentions and actuality. The standards can include normative data and data on the performance of outstanding professionals.

In the evaluation of an edutcational episode or series of episodes, each of these descriptions might helpfully be divided in three parts. One part is the *inputs* at the start, such as his beginning level of competence, available materials, and amount of time allocated for education. A second part is the educational *process*. The third part is the educational *outcomes*, such as knowledge, skills, attitudes, competence, performance and health care at the end of the educational activity that might be attributed to the educational process.

*Judging consists of making two types of comparisons.* One is between *intentions and actuality*. This comparison helps the professional to recognize how well his plans measure up to his performance. He may discover that he intended to spend twenty hours on a learning episode but actually spent thirty. He may also discover that he intended to divide the time about equally between reading and discussion with peers but actually spent all of it in discussion. The second comparison is between the *gaps* that he discovers between intentions and actuality, and information about the educational activity of other people which can serve as *standards* against which to interpret the changes that occur for him. He may discover that a small change in his competence is more than most professionals accomplish through continuing education. He may find no gap between his performance and his intentions, but discover that both are far below the level of performance of most of his peers. His problem may be a low level of aspiration.

*The reason for evaluation is to make judgments about effectiveness of the educational activity so that the conclusions can be used to improve the educational activity* [35]. The major gaps between intentions and actuality indicate points at which the self-directed learner can concentrate his efforts to improve his educational activity. The comparisons between gaps and standards indicate the types of efforts that seem to be directed at the most important needs, such as changes in level of aspiration or changes in methods. The descriptions of current circumstances indicate the foundation upon which improvement efforts can be built. The self-directed learner can use the resulting conclusions to continually improve his continuing education activities so that their benefits are greater than the investment.

The evaluation component of the mentor role is at once comprehensive and selective. The self-directed learner should have a procedure by which he can quickly obtain a *comprehensive view* of how well his continuing education efforts are progressing. He also needs a procedure by which he can evaluate in some *depth* those aspects of his educational activity at which the results of evaluation are likely to lead to the greatest improvements in the educational activity. The improvements in how much he learns and is able to use in his practice should be well worth the investment in evaluation. For the self-directed learner, educational evaluation is the continuing process that he uses to make judgments based on evidence about the effectiveness of his continuing education effort, in ways that encourage and facilitate his use of the results of evaluation for the improvement of his educational effort. Most of this evaluation he can and should do for himself. At some points, he will benefit greatly from a more objective contribution by others.

Listed below are eighteen steps that a health professional might follow to obtain a comprehensive overview of his continuing education effort. In an hour's time, he might list briefly what he already knows about regarding the first fifteen steps, and briefly note probable plans for the remaining three steps. The resulting summary can provide a basis for deciding where to *focus his evaluation activities* so that they produce the greatest return on the investment. The relationships between these eighteen steps are presented schematically in Figure Two. The fifteen numbers in the cells and the three below the matrix refer to the evaluation steps. It is not necessary to proceed through all of the steps in sequence. For instance, the nine descriptive steps could be completed in any order. This procedure could be used for a continuing education effort of any duration, a learning episode that entails a few hours, a series of episodes such as a health-care audit that extends over several months or his entire continuing education effort for the year. For the following listing of eighteen evaluation steps, it is assumed that a professional is evaluating a series of learning episodes that extend over several months in relation to a health-care audit, in part to decide whether or not to repeat the process for another area of health care.

Figure Two

FRAMEWORK FOR EVALUATION PLAN

TYPES OF INFORMATION ABOUT CONTINUING EDUCATION

| | DESCRIPTIONS | | | JUDGMENTS | |
|---|---|---|---|---|---|
| | Expected | Actual | Standards | Compare expected with actual | Compare with external standards |
| **Inputs** | 1 | 2 | 3 | 4 | 5 |
| **Process** | 6 | 7 | 8 | 9 | 10 |
| **Outcomes** | 11 | 12 | 13 | 14 | 15 |

**16.** Select aspects for more intensive evaluation.
**17.** Conduct intensive evaluation.
**18.** Use results for improvement of educational effort.

(1) *Describe expected inputs.* How much time does the professional intend to spend on continuing education? What other people are expected to be associated with the educational activity? What should their roles be? What learning materials and other educational resources does he expect to use? How much expense is likely to be entailed? (Note: the information for steps one, six and eleven, on expectations and intentions, may have to be estimated after the educational activity is completed if no description of plans and expectations was prepared beforehand.)

(2) *Describe actual inputs.* What were the inputs of time, people, materials, money and other educational resources that were actually used during the educational activity? What was the professional's competence or performance related to the objectives at the start of the educational effort? Self-assessment inventories can help to collect this data, as can a health-care audit.

(3) *Describe external standards related to inputs.* What inputs do peers allocate to similar types of continuing education efforts? What is the range? How about the most effective self-directed learners? How much consensus is there regarding optimal amounts and types of inputs for this kind of educational activity?

(4) *Compare expected with actual inputs.* Did the professional's plans and intentions work out as expected? Where were the major gaps between expectation and actuality? Did he spend more time but locate fewer materials than anticipated? On which gaps should he concentrate in order to improve future educational efforts?

(5) *Compare the internal comparison between expected and actual inputs with external standards regarding inputs to comparable educational efforts.* Is there information available on comparable activities to use as standards to interpret personal experience? If so, how does the professional's experience compare? Are there any inputs, which the external standards indicate as crucial, that seemed to be inadequate for the professional?

(6) *Describe expected process.* In what ways does the professional intend to interact with learning materials, other people and the other educational resources in order to achieve his educational objectives? What does he intend to do? What does he expect others to do? What is the intended sequence of learning episodes?

(7) *Describe actual process.* What were the learning activities and related procedures that actually occurred? How much time was spent doing what with whom or with what? Some types of learning activities such as a correspondence course, a patient-management problem, or a health-care audit typically result in a record that provides a brief description of the process. For many types of

learning activities in which a self-directed learner might engage, the professional must prepare such a summary description for himself. In many respects, this is the easiest description to prepare even though the process is complicated, because it deals with active behavior by the learner.

(8) *Describe external standards related to the learning process.* What do peers do when they engage in similar learning activities? Are there some parts of the process that seem to be crucial? How about the most effective self-directed learners? Are there alternative learning styles that should be taken into account? Detailed case studies of professionals who effectively use comparable types of learning activities can be especially useful.

(9) *Compare expected with actual processes.* Did the learning activities and related activities take place as expected? Where were the major gaps between expectation and actuality? Which gaps deserve the most attention in further efforts to increase the effectiveness and satisfaction of learning activities? Participant-reaction forms typically yield this type of data.

(10) *Compare the internal comparison between expected and actual processes with external standards regarding processes in comparable educational efforts.* How does the professional's experience compare with that of peers who used similar learning activities? Do gaps between expected and actual processes reflect inadequate performance or unusual aspirations as a learner? If so, what are the implications for future educational efforts?

(11) *Describe expected outcomes.* What does the professional expect to result from the educational activity? What are his educational objectives? What behavioral changes does he expect, in the form of increased competence and improved performance? What other outcomes should result from his continuing education activity, such as better health maintenance or improved patient care?

(12) *Describe actual outcomes.* For some other approaches to educational evaluation, this is the only category of data that is collected. What are the behavioral changes for the learner and other results that actually occur? What did the professional learn from the educational activity? What can he now do better as a result? Various instruments and procedures are available that can be used or adapted to collect this category of evaluation data. Included are achievement tests, self-assessment inventories observational check lists and rating scales, review of health records videotape of performance, survey of impact on patients.

(13) *Describe external standards related to educational outcomes.* What do peers typically learn as a result of similar educational activities?

Are there some outcomes that are most likely? What objectives do the most effective self-directed learners achieve?

(14) *Compare expected with actual outcomes.* Did the professional achieve his educational objectives to the extent to which he intended? Where were the major gaps between expectation and actuality? Which gaps deserve the most attention?

(15) *Compare the internal comparison between expected and actual outcomes with external standards regarding outcomes from comparable educational efforts.* How does the professional's achievement compare with that of peers who engaged in similar educational activities? Should changes be made in expectations, in educational efforts, or in both? What are the implications for future educational efforts?

(16) *Select aspects for more intensive evaluation.* The professional should review the descriptive and judgmental information that he has summarized for each of the preceding fifteen steps. At which points do the opportunities seem to be greatest to better understand and improve aspects of the educational program? Sometimes a smaller gap is a more likely place to start because it is more amenable to improvement. The health professional should usually focus his evaluation efforts on those gaps that were identified in steps four, nine, and fourteen for which the investment in evaluation is most likely to produce improvement in his subsequent educational experiences. If he discovers that the descriptive information is inadequate for useful comparisons, it may be best to concentrate the evaluation effort on improvement of the descriptive information that is subsequently available.

(17) *Conduct intensive evaluation.* All of the procedures that have been developed for educational evaluation are available to the professional who tries to find out why the selected aspects of his educational activity function as they do and who seeks ways to improve them. Many of the procedures such as self-assessment inventories, check lists, and guides to review records are self-administered. Some, such as the focused interview, require another person who can probe and describe more objectively than most people can do for themselves. However, when self-evaluation procedures have been well developed and described, as in the case of the self-audit, most professionals are able to collect and analyze the necessary data to evaluate their continuing education activities.

(18) *Use results for improvement of educational effort.* One of the points at which the self-directed learner can and must assume the primary responsibility for educational evaluation is in the use of conclusions. One aid to utilization is to rank-order the conclusions

in order of desirability and then to review each conclusion in turn regarding feasibility. Those that are high on both should receive first consideration for implementation.

The foregoing eighteen steps can be performed by most professionals with a minimum of help or guidance, after an initial experience with them. Typically no more than one third of the time available for evaluation should be devoted to the first fifteen steps, and about one third should be used for step seventeen. Assistance by another person to increase objectivity is most helpful for steps two, seven, twelve and seventeen.

Persons engaged in the development of regional health manpower can make their greatest contribution to the evaluation efforts of self-directed learners in two ways. One is by the development of self-administered evaluation instruments. The second is by the preparation of statements on external standards for the topics that many health professionals study independently. The self-directed learner can then use these statements for steps three, eight and thirteen of the evaluation process.

## Study of Continuing Education

Another use of the model of the mentor role in self-directed education is for the study of continuing education as it relates to professional practice. As with any model that is used for empirical research, the mentor role model explains relationships between variables in self-directed education that can be tested by the use of empirical research procedures. Although research as well as anecdotal support for the assertions made in the model was noted at some points, much additional research is needed before the model could be considered validated.

An additional research approach is to use the model to identify professionals who, in varying degrees, are self-directed in continuing their education. A beginning point might be to separate a sample of health professionals into three categories – those who are not self-directed in continuing their professional education, those who are self-directed to a moderate extent and those who are outstanding examples of self-directed learners.

It is likely that many of those in the latter category of the most self-directed learners will also be among the most innovative in the ways in which they perform their professional role [48, p. 51]. A careful study of these exemplars of life-long self-directed education can produce the following results.

(1) The identification of useful selection criteria to use for admission to preparatory professional education so as to increase the number of health professionals who are self-directed learners.

(2) The recognition of ways in which preparatory professional education might be organized to help a greater proportion of health science students to become self-directed learners.

(3) The specification of ways in which practicing professionals can be assisted to become more self-directed in their continuing education efforts.

(4) The location of innovative ideas and practices for continuing professional education which might be adapted for use by other professionals.

(5) The availability of these highly self-directed learners as opinion leaders who can effectively encourage their peers to become more self-directed in continuing their education.

The next step in this research approach is the *preparation of case studies based on continuing education activities of health professionals.* Case studies would be prepared for a representative sample of professionals in each of the three categories but especially for those who are most self-directed in continuing their education. Each case study would describe one or a series of learning episodes in which a health professional engaged and would include descriptions of the types of decisions and activities that are referred to in the model, in which the professional actually participated. The final step in this research approach is to conduct a *comparative analysis* of the case studies to identify the similarities and differences among them. Some examples of the types of comparative analyses that might be conducted are listed below.

(1) *Identify successful procedures that professionals use to deal with difficult points in the series of learning episodes.* In most educational activities there are some points at which many learners experience difficulty and either perform unsatisfactorily or withdraw from the activity altogether. Examples include recognizing and accepting a need for behavioral change, overcoming negative barriers such as a lack of materials, difficulty choosing between many possible objectives, engaging in learning activities when working in a remote geographical location, and linking increased competence to improved patient care. The case studies can yield illustrations of ways in which a few professionals deal well with these critical points. When several professionals successfully use a similar procedure, it is worth analyzing to discover how it might be adapted for use by many others.

(2) *Recognize general concomitants of effective self-directed education.* The set of cases are likely to contain a number of instances in which various professionals engaged in a similar self-directed educational activity. These cases can be sorted into three groups regarding extent of success – high, middle and low. The three groups can then be compared to identify some of the concomitants of success.

(3) *Identify promising innovations regarding need-appraisal.* Some professionals will do things differently. One may use an unusual way to establish criterion performance to compare with his own in an area of practice for which standards are not readily available. Another

professional may report that an unusual encounter with a peer triggered his own concern about changing his own practices. The further analysis of such unique experiences may lead to suggestions that are more widely applicable.

(4) *Increase understanding of ways in which a greater awareness of the influence of context on continuing education can be useful.* People tend to take for granted the societal or professional context within which they function. Sometimes something happens to alert a professional to the influence of that context. For example, working as a preceptor with a premedical student may cause a professional to re-examine some ways of thinking that seemed very standard during conversations with peers. The introduction of an effective director of continuing education into a community hospital may have an impact on the outlooks of staff members regarding professional growth.

(5) *Recognize innovative ways to select from among many educational objectives.* One practitioner may find that a brief review of his professional health records can reveal priorities regarding the educational objectives that are most important. Another may emphasize objectives that are shared by peers with whom he will continue to interact after the educational experience as a way of encouraging utilization on new understandings.

(6) *Identify promising innovations regarding learning activities.* Examples include a highly personalized consultation service, or prepackaged learning modules with an emphasis on utilization, or procedures for scheduling and preserving time for continuing education. Each innovative educational practice that is reported may become a useful suggestion for another professional.

(7) *Recognize innovative ways for professionals to evaluate their own self-directed education.* The procedures that one practitioner develops to relate his learning activities to improvements in patient care may suggest a more general procedure that can be described for use by many of his peers. Similar generalization could occur for procedures by which a professional efficiently compares his expectations for an educational activity with what actually occurs.

The results of such comparative analyses of case studies on self-directed education can be used in various ways. The findings can be used to modify the model of the mentor role so that it has greater explanatory value. The findings can also be used to prepare practical suggestions for self-directed learners regarding the program-development decisions that they confront. Many of the results should be helpful in achieving greater continuity between preparatory and continuing education in the health sciences. A particularly useful result would be the development of ways to more closely connect continuing education and professional practice. The case studies also provide the basis for some interesting articles that might encourage more professionals to become more self-directed in continuing their education.

## Using Educational Resources

One additional use of the model of the mentor role in self-directed education is to assist the "linkage agent" who facilitates health-manpower development to increase the accessibility of educational resources. Some types of educational resources, such as journal articles and peers, are relatively well known to an individual practitioner if they are within his specialized field. The practitioner is less likely to know about relevant educational resources from other health specializations. The "linkage agent" performs an especially useful function when he enables practitioners to share educational resources among health fields.

Each passing decade during this century has witnessed increased division of health professionals into specialized clinical areas [12, p. 3]. Formal programs of continuing education have tended to reinforce this specialization [57]. During the past decade or two there has been a growing recognition that there are emerging societal needs for greater collaboration among professions [48, p. 34]. Some projects have actively sought greater collaboration among health professions in the preparatory education of students through work with neighborhood health centers [48, p. 126]. Greater sharing among health fields is also an important ingredient in continuing education.

Those who facilitate life-long self-directed education for health professionals in a region may be associated with any one of several organizations. Examples include a regional medical program, a state or local professional association, a state health department, a hospital, or a university. The facilitator may serve as an educational consultant to individual practitioners and may help to develop and make accessible a broader range of educational resources.

The model of the mentor role can be used to identify points at which a "linkage agent" might be most helpful in encouraging self-directed education by health professionals. Listed below are some likely points.

(1) Disseminate information about variability in professional performance that is likely to activate a readiness to change by health professionals.

(2) Help to assemble information about deficiencies in health maintenance and patient care.

(3) Assist in bringing together perceptions of gaps between actual and criterion performance as seen by professionals in a specialty and as seen by people in related roles.

(4) Increase awareness of available educational resources in various specialized clinical areas within the health field.

(5) Provide advance information about opportunities for continuing education to help professionals to plan their continuing education.

(6) Reinforce facilitators of continuing education such as familiarity with criterion performance and availability of self-study-learning modules that relate directly to clinical practice.

(7) Reduce barriers to continuing education such as lack of literature-retrieval mechanisms and inflexible scheduling of continuing education programs.

(8) Present a rationale for selecting a few educational objectives from a sometimes overwhelming number.

(9) Provide criteria that professionals can use for the selection of appropriate learning activities.

(10) Encourage organizations, such as community hospitals, to make arrangements that support the efforts of professionals to continue their education.

(11) Suggest ways in which organizations can encourage and support changes in procedures that help to reinforce new and desirable practices that result from continuing education.

(12) Prepare forms that assist self-directed learners to evaluate their continuing education activities.

## PART FOUR: GUIDELINES FOR FACILITATION OF SELF-DIRECTED EDUCATION

The persons who have some responsibility for the development of regional health manpower perform an important role in the facilitation of self-directed education. The persons who have such responsibility occupy various positions such as director of continuing education in a hospital, executive of an association of health professionals, coordinator of continuing professional education in a health science college of a university, or an official in a state health department. They perform this facilitation role largely by serving as a "linkage agent" between national and regional resources related to continuing education and individual professionals in the region.

Listed below are the major guidelines that such "linkage agents" can use to effectively facilitate life-long self-directed education.

(1) Emphasize as the main purpose of continuing education for health professionals the improvement of patient care and health maintenance and the enrichment of health careers.

(2) Recognize that the range of educational needs and opportunities can be bewildering, and that an effective approach to self-directed continuing education is a selective one that enables the professional to set priorities.

(3) Include within the "linkage agent" role the following four interrelated activities:

   (a) facilitating closer articulation between preparatory and continuing education,

   (b) increasing the accessibility of educational resources for the individual practitioner,

   - (c) helping professionals to better understand the importance and methods of life-long self-directed education, and
   - (d) encouraging professionals to become more self-directed in continuing their education.
- (4) Utilize the components of the mentor role (need, setting, objectives, activities, evaluation) as a way to help professionals to better conceptualize a more self-directed approach to continuing education.
- (5) Assist professionals to appraise their educational needs by:
   - (a) providing information about variability and deficiencies in professional practice that can stimulate them to recognize their own educational needs,
   - (b) providing professionals with a rationale for continuing education need-appraisal,
   - (c) providing practitioners with forms and procedures that they can use to appraise their own educational needs, and
   - (d) assembling standards of professional performance such as by use of a "college of peers."
- (6) Assist professionals to better understand and utilize their professional settings for purposes of continuing their education by:
   - (a) increasing their awareness of educational resources, and
   - (b) encouraging the institutions and organizations with which health professionals are associated to support continuing education as a major means of individual and organizational renewal.
- (7) Assist professionals to set their continuing education objectives by:
   - (a) helping practitioners to become familiar with criterion performance as an attainable ideal,
   - (b) encouraging them to relate their educational objectives to their career aspirations,
   - (c) providing practitioners with a rationale for the selection of a few educational objectives on which to focus at a given time,
   - (d) providing information about the types and amounts of effort that are typically required to achieve some common educational objectives,
   - (e) assisting practitioners to explore the pros and cons of various educational objectives, and
   - (f) helping them to state clear and realistic educational objectives.
- (8) Assist professionals to select and organize their learning activities by:
   - (a) familiarizing them with the range of available methods of learning.
   - (b) helping to develop educational materials that are useful for self-directed study,

    (c) providing arrangements for easy retrieval of knowledge,
    (d) helping practitioners to locate peers who will collaborate on continuing education activities, and
    (e) providing criteria for effective continuing education.

(9) Assist professionals to evaluate their self-directed education efforts by:
    (a) providing materials and procedures for self-administered evaluation.
    (b) providing external standards that practitioners can use to interpret the results of evaluation, and
    (c) encouraging the use of evaluation findings to improve their educative activity.

(10) Support efforts to study self-directed education, by use of comparative analyses and other procedures.

## REFERENCES

1. Anderson, Richard C. "Control of Student Mediating Process During Verbal Learning and Instruction." *Review of Educational Research.* 1970. Vol. 40, pp. 349-369.
2. Beckhard, R. *Organization Development: Strategies and Models.* Wesley Publishing Company, Inc., Reading, Mass. 1969.
3. Beckhard, R. "Organizational Issues in the Team Delivery of Comprehensive Health Care". *Milbank Quarterly.* June 1972, pp. 287-316 (also Rubin and Beckhard article on "Factors Influencing the Effectiveness of Health Teams." pp. 317-335).
4. Bennis, W.G. *Organization Development: Its Nature, Origins and Prospects.* Addison-Wesley Publishing Company, Inc., Reading, Mass. 1969.
5. Bitzer, Donald and Skaperdas, D. *The Design of an Economically Viable Large-Scale Computer Based Education System.* Univ. of Illinois. Computer-Based Education Research Laboratory, Urbana, Ill. 1972, CERL Report X-5.
6. Blake, R.R. and Mouton, J.S. "Managerial Grid Develops Team Action." *Industrial World.* June 1968, pp. 21-23.
7. Brody, Barbara L. and Stokes, Joseph. "Use of Professional Time by Internists and General Practitioners in Group and Solo Practice." *Annals of Internal Medicine.* 1970, Vol. 73, pp. 741-749.
8. Brown, Clement R., Jr. and Uhl, Henry S.M. "Mandatory Continuing Education – Sense or Nonsense?" *Journal of the American Medical Association.* 1970, Vol. 213, No. 10, pp. 1660-1668.
9. Burgess, Paul. "Reasons for Adult Group Educational Activities." *Adult Education.* 1971, Vol. 22, No. 1, pp. 3-29.
10. Callan, Laurence B., Parlette, M.P.H. and Leonard, Alvin R. "12-State Survey of Needs and Interests in Continuing Education in Public Health." *Public Health Reports.* 1969, Vol. 84, No. 8, pp. 741-755.
11. Castle, C. Hilmon and Storey, Patrick B. "Physicians Needs and Interests in Continuing Medical Education." *Journal of the American Medical Association.* 1968. Vol. 206, No. 3, pp. 611-628.
12. Clark, Ira C. *The Development of Physician Continuation Education.* University of Iowa, Iowa City, Iowa. 1966. Health Care Research Series #3.

13. Cooper, Signe S. "A Yearning for Learning." *Journal of Continuing Education in Nursing.* 1970. Vol. 1, No. 1, pp. 17-22.
14. Cross, Harold D. "Educational Needs as Determined by the Problem Oriented Medical Record." *Patient Care Magazine.* Spring, 1969. p. 108 ff.
15. Daeschner, C.W. "A Self-Evaluation and Education Program for Pediatricians." *Federation Bulletin.* 1971. Vol. 58, No. 2, pp. 56-61.
16. Davidson, Robert C., Lein, John N., Bratrude, Amos P. and Kelday, Joan M. "Postgraduate Preceptorships." *Journal of the American Medical Association.* 1971. Vol. 215, No. 11, pp. 1799-1801.
17. Dimond, E. Grey. "National Resources for Continuing Medical Education." Congress on Medical Education. *Journal of the American Medical Association.* 1968. Vol. 206, No. 3, pp. 617-620.
18. Dollinger, Malin R., Korenman, Stanley G., Solomon, David H. and Brayton, Donald F. "A Novel Program of Continuing Medical Education." *Journal of the American Medical Association.* 1972. Vol. 220, No. 5, pp. 714-716.
19. Dryer, Bernard V. "Lifetime Learning for Physicians." *Journal of Medical Education.* 1962. Vol. 37, pp. 1-134.
20. Eisele, C. Wesley, Editor. *The Medical Staff in the Modern Hospital.* McGraw-Hill, Inc., N.Y. 1967, pp. 399-400.
21. Fisher, A.W. "Patients' Evaluation of Outpatient Medical Care." *Journal of Medical Education.* March, 1971. Vol. 46, pp. 238-244.
22. Frase, Lawrence T. "Boundary Conditions for Mathemagenic Behaviors." *Review of Educational Research.* 1970. Vol. 40, pp. 337-347.
23. Freidson, Eliot. *Professional Dominance, The Social Structure of Medical Care.* Atherton Press, N.Y. 1970.
24. Hill, Richard J. *A Comparative Study of Lecture and Discussion Methods.* The Fund for Adult Education, N.Y. 1960. 153 p.
25. Holden, W.D. "Specialty Board Certification as a Measure of Professional Competence." *Journal of American Medical Association.* Aug. 10, 1970. Vol. 213, pp. 1016-1018.
26. Horn, Robert E. "Experiment in Programmed Learning." In Philip Runkel, Roger Harrison, and Margaret Runkel, Editors. *The Changing College Classrooom.* Jossey-Bass, San Francisco, Cal. 1969. pp. 68-87.
27. Houle, Cyril O. *The Inquiring Mind.* Univ. of Wisconsin Press, Madison, Wisc. 1961. 87 p.
28. Houle, Cyril O. "The Lengthened Line." *Perspectives in Biology and Medicine.* 1967. Vol. 10, pp. 37-51.
29. Houle, Cyril O. "A Firstling of His Heart and Hand." *Perspectives in Biology and Medicine.* 1969. Vol. 12, No. 4, pp. 561-583.
30. Houle, Cyril O. "To Learn the Future." *Medical Clinics of North America.* 1970. Vol. 54, No. 1, pp. 5-18.
31. Hubbard, John P. "Self-Education and Self-Assessment as a New Method for Continuing Medical Education." *Archives of Surgery.* 1971. Vol. 103, pp. 422-424.
32. Ingelfinger, Franz J. "Annual Discourse – Swinging Copy and Sober Science." *New England Journal of Medicine.* 1969. Vol. 2, No. 10, pp. 526-532.
33. Johnstone, John W.C. and Rivera, Ramon J. *Volunteers for Learning.* Aldine Pub. Co., Chicago. Ill. 1965.
34. Kiresuk, T.J. and Sherman, R.E., "Goal Attainment Scaling: A General Method for Evaluating Comprehensive Community Mental Health Programs." *Community Mental Health Journal.* 1968, Vol. 4, pp. 443-453.
35. Knox, Alan B. "Continuous Program Evluation" in Shaw, Nathan C., Editor. *Administration of Continuing Education: A Guide for Administrators.* National

Association for Public School Adult Education, Washington, D.C. 1969. pp. 368-391.

36. Lewin, Kurt. "Group Decisions and Social Change" in Cartwright and Zander. *Group Dynamics.* Row, Peterson, Evanston, Ill. 1953. 642 p.
37. London, Herbert. "Experimental Colleges – University Without Walls: Reform or Rip-Off?" *Saturday Review.* Sept. 16, 1972. pp. 62-65.
38. Mager, Robert F. "The Need to State Our Educational Intents." In Aerospace Education Foundation, Editor. *Technology and Innovation in Education.* Praeger, N.Y. 1968. pp. 35-40.
39. Miller, George E. and others. *Teaching and Learning in Medical School.* Harvard Univ. Press, Cambridge, Mass. 1962.
40. Miller, George E. "Continuing Education for What?" *Journal of the Arkansas Medical Society.* 1967. Vol. 64, No. 3, pp. 123-127.
41. Miller, James G. "Computer-Based and Computer-Planned Continuing Medical Education for the Future." *Journal of the American Medical Association.* 1968. Vol. 206, No. 3, pp. 621-624.
42. Osler, William. *Aequanimitas.* 1906. Lewis, London.
43. Patient Care. *Patient Care.* May 15, 1971.
44. Patient Care. *Patient Care.* May 30, 1971.
45. Phenix, Philip H. *Realms of Meaning: A Philosophy of the Curriculum for General Education.* McGraw-Hill, N.Y. 1964.
46. Richardson, Fred MacD. "Peer Review of Medical Care." *Medical Care.* Jan.-Feb. 1972, pp. 29-39.
47. Schein, E.H. *Process Consultation: Its Role in Organization Development.* Addison-Wesley Pub. Com., Inc., Reading, Mass. 1969.
48. Schein, Edgar H. with the assistance of Kommers, Diane W. *Professional Education – Some New Directions.* McGraw-Hill Book Co., N.Y. 1972.
49. Solomon, Daniel, Editor. *The Continuing Learner: Research Reports.* The Center for the Study of Liberal Education for Adults, Chicago, Ill. 1964.
50. Solomon, Lawrence N., Berzon, Betty and Davis, David P. "A Personal Growth Program for Self-Directed Groups." *Journal of Applied Behavioral Science.* 1970. Vol. 6, pp. 427-452.
51. Stern, George and Cope, Alfred. "Differences in Educability Between Stereopaths, Non-stereopaths and Rationals." *American Psychologist.* 1956. Vol. 11, No. 8.
52. Storey, Patrick B. and Associates. *Continuing Medical Education.* American Medical Association, Chicago, Ill. 1968.
53. Szczypkowski, Ronald B. *The Participation of Philanthropic Foundations in Continuing Professional Education (CPE).* Unpublished dissertation. Columbia University, Teachers College, N.Y. 1971.
54. Thelen, Herbert A. *Learning by Teaching: The Helping Relationship in the Classroom.* Univ. of Chicago, Department of Education, Chicago, Ill. 1968.
55. Tough, Allen M. *Learning Without a Teacher – A Study of Tasks and Assistance During Adult Self-Teaching.* Ontario Institute for Studies in Education, Toronto, Ontario, Canada. 1967. Educational Research Series No. 3.
56. Tyler, Ralph W. *Basic Principles of Curriculum and Instruction.* Univ of Chicago Press. Syllabus Division, Chicago, Ill. 1950. Syllabus for Education 305.
57. Vollan, Douglas D. *Postgraduate Medical Education in the United States.* American Medical Association, Chicago, Ill. 1955.
58. Vollmer, Howard M. and Mills, Donald L., Editors. *Professionalization.* Prentice-Hall, Inc., Englewood Cliffs, N.J. 1966.
59. Weed, L.L. *Medical Records, Medical Education, and Patient Care.* Year Book Publishers, Chicago, Ill. 1970.

60. Williams, D.H. "A Taxonomy of Continuing Medical Education Endeavor." *Canadian Medical Association Journal.* 1967. Vol. 96, pp. 1040-1041.

61. Williamson, John W. "Assessing Clinical Judgment." *Journal of Medical Education.* Feb. 1965. Vol. 40, pp. 180-187.

62. Williamson, John W. and others. "Priorities in Patient-Care Research and Continuing Medical Education." *Journal of the American Medical Association.* 1968. Vol. 204, No. 4, pp. 303-308

## OTHER READINGS RECOMMENDED

Abramson, Stephen. "Evaluation in Continuing Medical Education." Congress on Medical Education. *Journal of the American Medical Association.* 1968. Vol. 206, No. 3, pp. 625-628.

American Medical Association. *Continuing Professional Education Programs of Voluntary Health Agencies* American Medical Association, Chicago, Ill. 1967.

American Nurses' Association. *Avenues for Continued Learning.* American Nurses' Association, N.Y. 1967.

Association for Hospital Medical Education. *Evaluation of Graduate Physician Manpower Education.* Public Health Service, Bureau of Health Manpower (DHEW), Washington, D.C. 1969.

Baker, S.A., Parrish, H.M. and Bishop, F.M. "What Do Rural General Practitioners in Missouri Really Do In Their Offices?" *Missouri Medicine.* 1967. Vol. 64, pp. 213-217.

Berg, Helen Margaret. *Factors Differentiating Participant and Nonparticipant Nurses in Continuing Education.* Unpublished Doctoral Dissertation. Columbia University, Teachers College, N.Y. 1973.

Bergman, A.B., Dassel, S.W. and Wedgwood, R.J. "Time-Motion Study of Practicing Pediatricians." *Pediatrics.* 1966, Vol. 38, p. 254-263.

Blaney, K.D. "A National Study of Directors of Medical Education." *Journal of Medical Education.* 1967, Vol. 42, pp. 660-665.

Boek, Walter. "Postgraduate Education: Approaches to the Evaluation of the Effectiveness of Continuation Medical Education." *Journal of the Kansas Medical Society.* 1964. Vol. 64, No. 10, p. 192.

Bogatyrev, I.D. "Establishing Standards for Outpatient and Inpatient Care." *International Journal of Health Services.* Feb. 1972, Vol. 2, pp. 45-49.

Boocock, S. and Schild, E.O., Editors. *Simulation Games in Learning.* Sage, Beverly Hills, Calif. 1968.

Boshier, R. "Motivational Orientations of Adult Education Participants." *Adult Education.* 1971, Vol. 21, pp. 3-26.

Brown, G.W., Keenan, T.A. and Miller, J.G., Editors. *EDUNET: Report of the Summer Study on Information Networks Conducted by the Interuniversity Communications Council (EDUCOM).* John Wiley & Sons, Inc., N.Y. 1967.

Bruce, James. "Postgraduate Education in Medicine." *Journal of the Michigan State Medical Society.* 1937. Vol. 36, pp. 369-377.

Bureau of Research and Planning. *A Survey of Continuing Medical Education for Physicians, Parts II and II.* California Medical Association. 1969. 60 p.

Bureau of Research and Planning. "Physician Opinions About Continuing Education Programs." *California Medicine.* Aug. 1969, pp. 132-139.

Bureau of Research and Planning. *A Survey of Continuing Medical Education for Physicians, Part III.* California Medical Association. 1970. 40 p.

Bureau of Research and Planning. "Physician Opinions About Continuing Medical Education Programs." *Socio Economic Report.* California Medical Association, 1970, Vol. 10, No. 8, 8 p.

Carmichael, Hugh T. "Continuing Education for Psychiatrists." *American Journal of Psychiatry.* 1968. Vol. 125, No. 1.

Carmichael, Hugh T. "Continuing Education for Psychiatrists." *Archives of General Psychiatry.* 1969. Vol. 20.

Carmichael, Hugh T. "The Psychiatric Knowledge and Skills Self-Assessment Program." *Federation Bulletin.* 1971. Vol. 58, No. 2, pp. 48-55.

*Continuing Education,* Philadelphia, Pa., Data Bases Division, Pennsylvania Research Associates (Quarterly director of continuing education programs in medicine/health since 1968).

Cooper, Signe S. "Continuing Education: An Imperative for Nursing." *Nursing Forum.* 1961. Vol. 7, No. 3, pp. 289-297.

Darley, W. and Cain, A.S. "A Proposal for a National Academy of Continuing Medical Education." *Journal of Medical Education.* 1961, Vol. 36, pp. 33-37.

Donabedian, A. "Evaluating the Quality of Medical Care." *Milbank Memorial Fund Quarterly.* 1966, Vol. 44, p. 166, Part 2.

Earley, L. William, "The Need for the Problems of Continuing Education for Psychiatrists." *American Journal of Psychiatry.* 1968. Vol. 124, No. 9, pp. 1151-1156.

Ebbert, A. "Two-Way Radio in Medical Education." *Journal of Medical Education.* 1963, Vol. 38, pp. 319-328.

Enclow, Allen J. and Myers, Vincent H. "Postgraduate Psychiatric Education: The Ethnography of a Failure." *American Journal of Psychiatry.* 1968, Vol. 125, No. 5, pp. 627-631.

Eisele, C. Wesley. "The Medical Audit in Continuing Education." *Journal of Medical Education.* April, 1969. Vol. 44, pp. 263-265.

Elkinton, J.R. "Self-Assessment of Knowledge." *Annals of Internal Medicine.* 1968, Vol. 68, pp. 247-249.

ERIC Clearinghouse on Adult Education. *Continuing Education in the Professions.* 1967. Syracuse, N.Y.

Erickson, Donald L. *Continuing Education Program Evaluation Self Study Guide.* Univ. of Illinois, College of Medicine. Center for the Study of Medical Education. 1969, 61 p.

Fahs, Ivan J. and Miller, Winston R. "Continuing Medical Education and Educational Television: An Evaluation of a Series for Physicians in Minnesota. *Journal of Medical Education.* 1970, Vol. 45, No. 8, pp. 578-587.

Fessel, W.J. "Assessing Quality of Care from the Medical Record." *New England Journal of Medicine.* Jan. 20, 1972, Vol. 236, pp. 134-138.

Freymann, John Gordon. "The Community Hospital as a Major Focus for Continuing Medical Education. *Journal of the American Medical Association.* 1968, Vol. 206, No. 3, pp. 615-616.

Gardner, John. *Self Renewal: The Individual and the Innovative Society.* Harper and Row, N.Y. 1965.

Gauvain, S. and others. "Evaluation of a Postgraduate Refresher Course in Clinical Medicine for Full Time Industrial Medical Officers." *Transcontinental Society for Occupational Medicine.* 1968, Vol. 18, pp. 116-119.

Houle, Cyril O. *Continuing Your Education.* McGraw-Hill, N.Y. 1964.

Kendall, Patricia L. "Continuing Education for Medical Practitioners." In the *Relationship Between Medical Educators and Medical Practitioners.* Association of American Medical Colleges, Evanston, Ill. 1965.

Knox, Alan B. "Adult Education Agency Clientele Analysis." Chapter 9 in *Review of Educational Research.* 1965. Vol. 35, pp. 231-239.

Knox, Alan B. "Interests and Adult Education." *Journal of Learning Disabilities.* April, 1968, Vol. 1, No. 2.

Lewis, Charles E. and Hassanein, Ruth S. "Continuing Medical Education – An Epidemiologic Evaluation." *New England Journal of Medicine.* 1970, Vol. 282, No. 5, pp. 254-259.

Long, Lillian D. "The Evaluation of Continuing Education Efforts." *Journal of Public Health.* 1969, Vol. 59, No. 6, pp. 967-972.

McGehee, Edward H. "The Philadelphia County Medical Society Self-Evaluation Examination." *Federation Bulletin.* 1971, Vol. 58, No. 2, pp. 62-68.

McGlothlin, William J. *Patterns of Professional Education.* C.P. Putnam's Sons, N.Y. 1960.

Manning, P.R. and others. "Research in Medical Education – Comparison of Four Teaching Techniques: Programmed Text, Textbook, Lecture-Demonstration and Lecture-Workshop." *Journal of Medical Education.* 1968, Vol. 43, pp. 356-359.

Marston, Robert Q. and Mayer, William D. "The Interdependence of Regional Medical Programs and Continuing Education." *Journal of Medical Education.* 1967, Vol. 42, p. 123.

Mayhew, Lewis. *Graduate and Professional Education, 1980.* McGraw-Hill Book Co., N.Y. 1970.

Meighan, S. Spence. "Continunig Medical Education: Philosophy in Search of a Plan." *Northwest Medicine.* 1966, Vol. 65, pp. 925-929.

Menges, Robert J. "Freedom to Learn: Self-Directed Study in a Required Course." *Journal of Teacher Education.* 1971, Vol. 23, No. 1, pp. 32-39.

Menzel, H. "Evaluation of the New York Academy of Medicine's Television Programs." *Journal of Medical Education.* 1966, Vol. 41, pp. 826-843.

Miller, George E. "Adventure in Pedagogy." *Journal of the American Medical Association.* 1956, Vol. 162, pp. 1448-1450.

Miller, George E. "Medical Education Research and Development." *Journal of the American Medical Association.* 1966, Vol. 197, p. 994.

Miller, George E. "Medical Care: Its Social and Organizational Aspects: The Continuing Education of Physicians." *New England Journal of Medicine.* 1968, Vol. 269, No. 6, pp. 296-299.

Miller, George E. "The Orthopaedic Training Study." *Journal of the American Medical Association.* 1968, Vol. 206, No. 3, p. 602.

Moore, W.E. *The Professions: Roles and Rules.* Russell Sage Foundation, N.Y. 1970.

Navarro, Vicente. "A Systems Approach to Health Planning." *Health Services Research.* Summer, 1969, Vol. 4, No. 2, pp. 96-111.

Norwood, William F. "Observations on the Profile of Continuation in Medical Education." *Journal of Medical Education.* 1955, Vol. 30, pp. 31-39.

Payne, Beverly C. "Continued Evolution of a System of Medical Care Appraisal." *Journal of the American Medical Association.* 1967, Vol. 201, p. 127.

Peterson, O.L., Andrews, I.P., Spain, R.S. and others. "An Analytical Study of North Carolina General Practice, 1953-54." *Journal of Medical Education.* 1956, Vol. 31, pp. 1-165, Part II.

Petit, Donald W. "State Medical Association's Role in the Continuing Education of the Practicing Physician." *Journal of the American Medical Association.* 1969, Vol. 208, No. 10, pp. 1835-1838.

Pope, C.R. and others. "Determinants of Medical Care Utilization: The Use of the Telephone for Reporting Symptoms." *Journal of Health and Social Behavior.* June, 1971, Vol. 12, pp. 155-162.

*Popiel, Elda. "The Many Facets of Continuing Education in Nursing." Journal of Nursing Education.* 1969, Vol. 8, No. 1, pp. 3-13.

Popma, Alfred M. *The Use of Surveys in Program Development.* Mountain States Regional Medical Program, Boise, Idaho, 1969, pp. 1-11.

Rappleye, W.C. *Graduate Medical Education: Report of the Commission on Graduate Medical Education.* Univ. of Chicago Press, Chicago, Ill. 1940.

Rogers, Carl R. *Freedom to Learn: A View of What Education Might Become.* Charles E. Merrill, Columbus, Ohio. 1969.

Rosenow, Edward C., Jr. "Medical Knowledge Self-Assessment." *Journal of the American Medical Association.* 1970, Vol. 214, No. 8, pp. 1553-1557.

Rubin, Louis, Editor. *Improving In-Service Education: Proposals and Procedures for Change.* Allyn and Bacon, Boston, Mass. 1971.

Ruhe, C.H. William. "A Survey of the Activities of Medical Schools in the Field of Continuing Medical Education." *Journal of Medical Education.* 1963, Vol. 38, No. 10, pp. 820-829.

Ruhe, C.H. William. "The American Medical Association's Program of Accreditation in Continuing Medical Education." *Journal of Medical Education.* 1964, Vol. 38, No. 7, pp. 670-678.

Schein, E.H. "The Role Innovator and His Education." *Technology Review.* 1970, Vol. 72, pp. 33-37.

Schwab, John J., Montenegro, Jose M. and Fleming, Jean M. "A Study of Patients' Attitudes Toward Medical Care." *Comprehensive Psychiatry.* 1967, Vol. 8, No. 2, pp. 100-107.

Shepherd, Glen R. "History of Continuation of Medical Education in the United States since 1930." *Journal of Medical Education.* 1960, Vol 35, No. 8, pp. 740-758.

Spurr, S.H. *Academic Degree Structures: Innovative Approaches.* McGraw-Hill Book Co., N.Y. 1970.

Stead, Eugene A., Jr. and others, Editors. "Educational Technology for Medicine: Roles for the Lister Hill Center." *Journal of Medical Educatioon.* 1971, Vol. 46, Part 2, p. 7.

Stein, J.J. "Re-examination and Re-certification of Physicians." *California Medicine.* 1968, Vol. 109, pp. 175-177.

Stensland, Per G. "Continuing Education for Health Professionals: A Model." (Manuscript) 1972.

Taubenhaus, Leon J. "The Hospital Record as a Tool for Assessment of Physician Postgraduate Educational Needs in the Cardiovascular Field." *Journal of the American Geriatrics Society.* 1969, Vol. 27, No. 11, pp. 1025-1033.

Uhl, H.S.M. "The Role of the Director of Medical Education in the Nonuniversity Community Teaching Hospital." *New England Journal of Medicine.* 1962, Vol. 266. pp. 647-652.

Uhl, H.S.M., Nelson, W.P., III and Woolsey, F.M., Jr. "The Albany Regional Hospital Program: A Preliminary Report." *New England Journal of Medicine.* 1962, Vol. 267, pp. 599-603.

Webster, Thomas G., Hoffman, Margaret E. and Lamson, Warren C., Editors. *Continuing Education: Agent of Change.* National Institute of Mental Health, Rockville, Md. 1971. Public Health Service Publication No. 2167.

Whipple, James B. *Especially for Adults.* Center for the Study of Liberal Education for Adults, Chicago, Ill. 1957.

Wilson, Paul T. "Continuing Education for Psychiatrists: Programs and Techniques." *American Journal of Psychiatry.* 1969, Vol. 125, No. 12, pp. 1729-1732.

Youmans, John B. "Experience with a Postgraduate Course for Practitioners." *Journal of the Association of American Medical Colleges.* 1935, Vol. 10, p. 154-173.

Zintel, Harold A. "Education and the Assessment of Surgical Knowledge." *Surgery: Gynecology & Obstetrics.* 1971, Vol. 133, pp. 659-660.

# The Process of Planning Programs of Continuing Education for Health Manpower

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Within a cure-oriented group it is not surprising that so many have looked to continuing education as a panacea for the ills of the health-care system. Though essential, continuing education is not a cure-all, nor can it be used effectively in isolation from other strategies. Cyril Houle reminds us, "While continuing education will not cure all the problems of the professions, without it no cure is possible"[8]

While continuing education must obviously be addressed to the problems of the health professions, its outreach must be directed to the whole range of health personnel, who offer technical assistance and support to the delivery of health services. The sheer weight of numbers of health workers required to meet the demands of the public makes the process of planning continuing education for health manpower an almost overwhelming responsibility.

The early emphasis on the linkage between science and service identified a role for continuing education in the transfer of new knowledge. The operational definition of continuing education in the Regional Medical Programs was utilitarian. It serves to make clear the distinction between continuing education and preservice education, which prepares for entry *into* a field. "Continuing education includes educational endeavors which are normally above and beyond those normally considered appropriate for entry. It should lead to assumption of new responsibility in the already chosen career field, update knowledge and skills in a chosen career or add knowledge and skill in a different but basically related health field."

Within the RMP construct, continuing education included training, when that training is on a more advanced level. It encompassed inservice education which involves a systematic approach to adjust the individual to the changing demands of the milieu in which he functions. (See the Chapter in this volume "The Provision of Inservice Education for Health Manpower.")

To the uninitiated the term continuing education may evoke an image of uninterrupted lifetime learning–a concept fully compatible with the ideal. However, the most superficial examination reveals that continuing education for health manpower is marked by its discontinuity. The searchlight of appraisal finds the "system" of continuing education a non-system. It tends to be sporadic, fragmented, and nonsequential. It develops in response to crises. Its planning is shaped by expediencies. It is rife with duplication, deficits and compartmentalization. Often in institutions of higher learning educators, preoccupied with undergraduate and graduate levels, relegate continuing education to the periphery. Yet the undergraduate curriculum should be considered the first orbit for continuing education.

The race against life and death, and the more subtle challenge inherent in the quality of life, demand the most serious consideration and skillful utilization of continuing education as a mechanism to create readiness for change and in fact to produce change. The grim reality of obsolescence, derived from change, has forced continuing education to center stage. The lengthened line of education may well turn out to be the lifeline for the providers, as well as the recipients of health services!

## OBSOLESCENSE

Simply stated, obsolescence is the loss of acquired knowledge and the nonacquisition and/or nonutilization of new knowledge. It cannot be dismissed as mere stupidity, inability, or stagnancy. To be sure, some find obsolescence a tolerable condition. For many others it is a threat of terrifying proportions. Many practitioners identify with Lewis Carroll's Red Queen: It takes a lot of running to stay in the same place.

The time-dependent knowledge gaps for technically educated people as developed by Klus [17] (see figure 1) has pertinence to the professional/technical people in health manpower. Those entering the field do so with a knowledge base which even then is partially obsolete and diminishes due to forgetting.

Refresher courses for registered nurses wishing to return to practice embody an attempt to replace forgotten knowledge and thus to close the retention gap. Such programs also include efforts to update the body of knowledge (through class work, self-directed study and practice in a supportive environment) to the level commonly held by entrants into the field.

The retention gap is a reality for those in practice, as well. The Intersociety Commission on Heart Disease Resources of the American Heart Association concerned itself with the maintenance of skill level. Scannell, who chaired the Surgery Study Section to the Advisory Committee, stated, "It is . . . clear that cardiovascular training is best accomplished in centers large enough to provide clinical material for at least three to five open heart procedures a week." [31]

The lack of quantitative data on actual case load and predictable future case loads on which to base training and retraining, as well as future manpower requirements is a serious handicap. The chapter in the book "Priorities and Data Bases: Their Relationship to Continuing Education" deals with the use of data and expands further on its importance in planning for continuing education.

A related concern was identified at the University of Iowa Medical Center in respect to the cardiovascular resuscitation. Such emergency situations do not occur frequently enough to provide positive reenforcement to the initial training. Neither does an emergency involve the total staff in the application of their knowledge and skill.

Retraining, then, is aimed at maintaining knowledge and skills at a functional level. Continual loss and only periodic retraining are not acceptable when the health personnel must perform in life- threatening situations. Proficiency must be kept at high level.

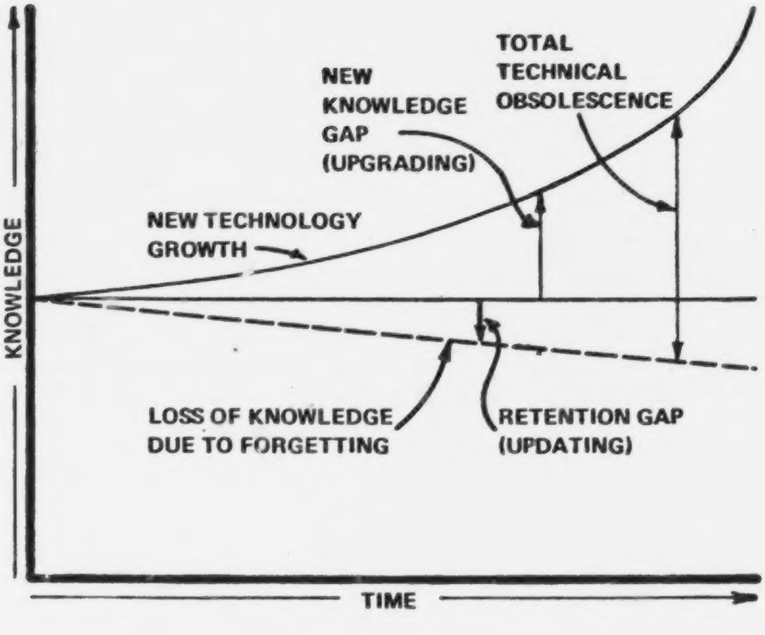
TOTAL
TECHNICAL
OBSOLESCENCE
NEW
KNOWLEDGE
GAP
(UPGRADING)
NEW TECHNOLOGY
GROWTH
KNOWLEDGE
LOSS OF KNOWLEDGE
DUE TO FORGETTING
RETENTION GAP
(UPDATING)
TIME

FIGURE 1
Time-Dependent Knowledge Gaps For Technically
Educated People
(Need for Updating and Broadening)

Developed by: John P. Klus, Ph.D., Professor and Chairman, Department of Engineering, University of Wisconsin-Extension

The principles of learning and what is known about retention come into play when critical levels of performance are dependent on retraining. A simulated laboratory experience with a manikin provides opportunity for practice. Overlearning, repetition of errorless performance, the rate of forgetting in which the initial rate is higher than later rates–these are all factors to be considered in designing the program. Obviously, the first review session should follow soon after the original learning, thus reducing the amount to be relearned, and shortening the time for relearning and over-learning.

Measures of criterion performance and effectiveness are involved. Both educational expertise and clinical expertise are required in developing such training programs.

Moore points out that the "ability to perform on a manikin *does not* ensure effectiveness in a real situation, but lack of ability to perform on the manikin makes effectiveness in the real setting unlikely."[25]

The advance of scientific research and technology creates a new kind of knowledge gap which requires a different kind of educational program. Upgrading programs are developed to provide the practitioner with the opportunity to acquire new knowledge and skills to the end that he performs more adequately in the citizen's behalf.

Thus the loss of previously acquired knowledge, plus new knowledge to replace or extend old knowledge, composes the total obsolescence gap. Sporadic attempts by the provider to gain a little information with occasional practice under a master teacher is not sufficient to close the gap.

Both updating and upgrading are learning processes which require planning and sustained effort. The thrust of continuing education must be toward maintaining the knowledge and abilities of the practitioner throughout his career. Combating obsolescence is a shared responsibility involving the individual, the employing agency, universities, and professional and other organizations. Major programming must be placed in the educational mainstream where a systematic approach to learning and a continuity of relationship with the learner may be maintained and nurtured over time. Increasingly, proof of continuing education will be demanded. A retrievable, current, quantitative and qualitative record of learning experience over a life-span is only one of the factors that will place the burden and opportunity of continuing education within the university.

## CONTINUING EDUCATION

It is essential to recognize that continuing education for health manpower is a system within other systems. For example, it is a subsystem of adult education, since it serves an adult clientele. It is a subsystem of the health system in that its target group of learners provide, enable or support the delivery of health services. Both adult education and continuing education are subsystems of the total educational system. It is clear that those planning and implementing programs for health manpower must reach beyond operational definitions and become aware of broader aspects.

There are many definitions of adult education to be found in the literature. A recent one offered by Houle is comfortable and comprehensive.

> Adult education is the process by which men and women (alone, in groups, or in institutional settings) seek to improve themselves or their society by increasing their skills, knowledge, or sensitiveness; or it is any process by which individuals, groups, or institutions try to help men and women improve in these ways[10].

Continuing education is a broader, larger concept than adult education, in that it implies the notion of the unending continuum of purposeful learning and individual self-development. More than any other segment in the educational continuum it embodies John Gardner's concept that the ultimate goal ". . . is to shift to the individual the burden of pursuing his own education."[6] If there is anything wrong with that fine sentence, it is that it does not say "the burden and the reward."

Continuing education for health manpower reaches the individual through his imperative need to add constantly to his knowledge and competency so neither becomes obsolete. To this end the learner- provider selects from available educational offerings those which meet his needs and the particular needs of the area of health service in which he functions. The practice setting is seen as a primary source for learning. An investigative approach to practice and a willingness to question and review each daily activity makes self-renewal possible from the wellsprings of his own practice.

The emergence of adult education as a separate field has enabled a needed and long overdue concentration on the nature of the adult learner. It has led to a developing body of theory and contributed to the creation of the methods and techniques that depart from traditional approaches and more effectively meet the learning needs of those for whom education is secondary to their major role in life.

The term andragogy—the art and science of helping adults to learn—as distinct from pedagogy—the art and science of teaching children—is being used more frequently. Knowles has pioneered the use of the term in the United States. He uses it as a frame for making clear certain assumptions which are crucial about the characteristics of adult learners in contrast to the assumptions made in pedagogy about child learners. [18] The assumptions, four in number, have a ringing authority for those who plan and implement programs of continuing education for health manpower. I will restate then here with my comments on particular aspects.

(1) *As a person matures his self-concept moves from one of being a dependent personality toward one of being a self-directing human being.*

A particular problem in the health field stems from the historic dominance of the medical profession. In the rise of this group from barber to surgeon, the body of content, rigorous course of study and standards of excellence have won them a deserved position of leadership. They have accepted the moral, professional and legal accountability for the welfare of patients. A counterpart has been the responsibility (sometimes assigned by law) of directing those who assist in providing care. One by one other health-care groups replicate the pattern with those who assist in providing services.

The hierarchy creates a dependency model which is at variance with the concept of a self-directed human being. Such dependency results in an underutilization of human potential. Utilization of manpower will not be maximized until providers can be helped to develop the educational and experiential base that permits the assumption of larger responsibilities which carry with them attendant accountability.

Another concern arises out of the difficulty entailed in leaving the daily obligations of practice in order to participate in learning. Unless and until continuing education based on high motivation produces the individual capable of self-direction and self-study, a large segment of the providers will remain untouched by new knowledge and be unable to bring the benefit of new developments to the clientele they serve. Alan Knox' chapter in this volume, "Life-Long Self-Directed Education" provides a model for such an individual.

(2) *As a person matures, he accumulates a growing reservoir of experience that becomes an increasing resource for learning.*

Adult educators know that the most valuable ingredient brought to the classroom by the learner is his own experience. Teaching/learning begins with a recognition of the value of past experience as a basis for the new. Building on this experience, enlarging, enriching it, providing new learning is an exciting process. The sensitive and accurate assessment and full utilization of past experience in all its rich variability is basic "to the further development of the individual." [14] The necessity for exacting skill development has sometimes led to an insistence by educators and institutions on *"do it my way."* Concepts and principles, if fully understood, permit considerable variability in how to carry out an intervention and still achieve its purpose. Rigidity in this respect restricts creative thought and the development of innovative approaches.* The strong and specific procedural orientation negates past experience.

The self-identity of the adult is dependent upon his life experience. Situations which minimize his experience, or fail to connect it as preparation

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*It should be pointed out that in terms of the patient there are arguments *for* uniformity. If the condition of the patient requires that the same treatment over a time be performed by a succession of individuals, the burden of adjustment to a standardized procedure should rest on the provider, rather than the recipient whose energies are directed to coping with illness. For those whose training is relatively short, the standardized procedure to the point of errorlessness is an operational protection.

for present learning, reduce his sense of self- esteem and become barriers to learning.

(3) *As a person matures, his readiness to learn becomes oriented increasingly to developmental tasks and social roles.*

A hallmark of the professional person has been the willingness to expose his performance to his own unrelenting scrutiny and the searching inquiry of others. When such an attitude and activity is displayed and shared by the highly prepared, an educative climate develops. The example of superordinates is followed by subordinates. In the provision of services, peer review, as well as performance evaluation, serves to create a readiness to learn.

Adulthood, as much as childhood, is a developmental period. Learning often occurs in response to the flood of a teaching moment engendered by a developmental happening. [7] The timing of the learning experience and homogeneous grouping on the basis of learning needs become critical if continuing education aimed at increased responsibility is to be effective.

The range of developmental tasks create activities and interests in the adult. These serve to make him open to new input. Concentration on one developmental task to the exclusion of others can produce a narrowing of horizons. Also to be considered is the stress placed upon the work role by multiple developmental tasks. At the occupational level lower salaries may make it impossible for individuals to participate in further education and training. Even when they receive training stipends, arranging for child care may interfere. For women in health care especially the professional commitment may be fractionalized by a simultaneous commitment to other developmental roles.

Awareness of such facts prompts the further development of self-directed study materials and effective programs of education within the employing institution.

(4) *As a person matures, his time perspective changes from one of postponed application of knowledge to immediacy of application; accordingly his orientation to learning shifts from one of subject-centeredness to one of problem-centeredness.*

In the adult, learning occurs in the here and now. It must be congruent with the demands of the world of work. The individuals who make up health manpower tend to be goal-oriented. Their education and training must make sense to them in terms of work demands.

The developmental tasks of adults usually presents problems to be solved. The daily diet of adulthood is made up of exploring alternatives and selecting from options–in short, of decisions, large and small. Continuing education for health manpower organizes the content to be learned and the skills to be acquired in terms of the problems of the provision of care. [11]

* * * * * * * *

The foregoing assumptions are not new. They are well known to adult educators. The frame of reference emphasizing maturation and changing developmental tasks is highly significant. The sequence of the assumptions if considered thoughtfully can be a synthesizing force for educator and learner alike.

Around these assumptions Knowles has developed a total practice of adult education. The brief presentation here should lead to an indepth study of the psychology of learning and the principles of adult education. Effective programming will never be realized until the riches in the field of adult education are appropriated by continuing education for health manpower.

## THE PLANNING PROCESS

"Process" means a series of steps conducing to some end. "Planning" implies a mental formulation. The simple but basic point of this chapter is that a series of steps toward an educational outcome can be formulated before any steps are taken and that, indeed, they must be formulated if the educational enterprise has much chance of succeeding. Even educational activities that succeed through happy accident or insightful "hunch" could probably be improved and certainly could be made more economical if freedom operates within the form of design.

The planning process is a design for meeting needs–individual, institutional and societal. It is fostered in a climate where recognition of the need to change, as well as the readiness to change, are operating factors. The planning process necessarily involves the participation of the appropriate people. It occurs within a set of existing relationships and developing relationships.

In the early stages of the planning process the above conditions may be present in a primitive state. As the process continues, needs, readiness to change, and stable patterns of cooperation become more perfectly defined.

Planning is a key executive tool to be utilized in many activities. Educational planning provides the guidelines for program development.

Major steps in planning are:*

1. Formulate and enunciate the philosophy: "Who are we, what do we believe, why do we plan?" It is here the question must be raised, "What will happen if we do not intervene?"
2. Clarify the goals: "What are we working toward?"
3. State the objectives: "What specifically are we going to do, in what sequence, and when?"
4. Assess obstacles and restraints: "What will we do about them?"
5. Determine scope and thrust of program activities.

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*Since planning is a human enterprise involving numbers of people working in concert, the plural personal pronoun will be used.

6. Control through management: "What personnel are needed? Who does what? What financial base is required? How do we keep the activity on the pre-determined track?"

7. Evaluate and revise: "How will we measure and monitor progress, and feed in new information for continued effective programming? How will we know that we have accomplished what we set out to do?"

## Participative Planning

The dominant theme in continuing education is that of involvement. Perhaps, more than any of the other of the Federally funded programs, the Regional Medical Program secured this involvement through the broad base of participatory planning across multiprofessional, multidisciplinary and multi-occupational lines. It enriched the health-manpower mix with broad community representation at the receiving end of the delivery of health services. In many of the regions, the art of inclusion has been practiced until it has become a fine art.

Participative planning which eventuates in action requires the involvement of responsible citizens. The imposed solution rarely pays off in terms of human benefits. The hope is that through comprehensive long-range planning, continuing education (as health care itself) can be made available, accessible, acceptable and appropriate to the needs of the user.

Planning implies predetermining a course of action. It involves logical thinking, but it requires as well a touch of the visionary and the ability to see distant ends. Regional Medical Programs demonstrated the force and effectiveness of cooperation, collaboration, and planning.

Continuing education for health manpower, then, is a predictable concern among those who wish either to provide, or receive exemplary health services. The widespread belief among our populace strengthened by the philosophy oft stated by government, that health care is a citizen's right, has involved many different kinds of people in the process of planning continuing education as one means to that end. To be sure there is wide difference in the depth, breadth, and degree of involvement of the planners.

It is not surprising to find both educators and learners involved. For them, such planning is a primary concern. Nor is it surprising to find administrators involved, for they are the legitimizers and enablers of the process. But there are as well a host of significant others whose values, understandings and input affects the planning process in myriad ways.

These significant others are the policy-makers who may know little about health or education, except that they believe in both! Also included are the consumers, the recipients of service whose knowledge about health is general and whose experience with education is largely subjective. Having found the educational approach useful in their own lives, they are insisting that the practitioners and providers of health services avoid obsolescence and stay current if possible in order to be even in the game of applying the findings of science and research to the benefit of the citizen.

As Bernard Baruch has said: "I am interested in medicine because my father was, I am interested in research because I believe in it, I am interested in arthritis because I have it!"

A host of different motivations bring people to the health-planning tables. Persistent and changing motivations within people keep them there. In spite of their many differences, there is amazing consensus that continuing education is a mechanism whereby desired ends can be achieved.

Included among the significant others involved in planning are the specialists who are experts in some aspect of health care. In spite of deep knowledge and a wide repertoire of highly developed skills, such individuals may be limited in their understanding of the learning process and may not see themselves as having an educative role. Yet, the accumulated knowledge and experience of such individuals must be tapped and made available to other providers if it is to be applied more broadly to in practice. (See the chapter in this book "The Health-Care Practitioner as Instructor.")

Truly, we have entered upon a new era of participative planning–a necessary forerunner to working and learning together.

## Professionalism/Isolationism

Professionalism is a state of mind, as well as a state of being and doing. Among health professionals are the shared beliefs that health care is different from any other human service and that the points of difference among the health professions are more numerous and significant than the commonalities. Such a posture leads to narrow, unilateral compartmentalized planning.

One of the generally accepted hallmarks of a professional group in the past has been the identification, transmission and application of a body of knowledge considered to be unique. Bolstered by the mystique of uniqueness most professions have felt that they alone were competent to educate their members. Accordingly, most professions have set confidently about planning and implementing programs of continuing education. In the single-minded absorption and high-minded pursuit of excellence in their own field, they have tended not to look at the educational practices in related fields. Few have had awareness of the field of adult education and the light it could shed on their common problems.

Adult educators who have crossed the hallowed threshold of the several health professions are confounded by the isolationism that blocks them. They are at the same time impressed by the similarity of approach which seems to have occurred without cross-fertilization among the parallel pathways. Increasingly adult educators are suggesting that comparative studies not only of groups in the health field but also in the areas of human service could be a significant contribution. Houle suggests that " . . . since all professions embody the same general ideas and procedures in their continuing education endeavors, they can learn from each other the expertise in adult education which they require, an expertise which itself is being recognized as the basis for an independent field."[9]

When the various groups are brought together, as they have been in the Regional Medical Programs, the commonalities become apparent. Over time, an exchange of ideas and information develops relating to planning for continuing education, designing, implementing and evaluating programs. On closer analysis content in many areas is found not to be unique since it derives from common sources and is intended for a common goal. Thus there is ground for the development of core curriculum and for interprofessional, interdisciplinary and interoccupational approaches. Such an approach is viewed not as a substitute for but as an addition to essential further indepth learning in the individual fields.

The expertise in adult education should be tapped to benefit the continuing education effort for health manpower. Designing educational programs requires well prepared and highly competent individuals. It is ironic in the field of health, where specialization is so highly regarded, that specialization in adult education has not been seen as essential to the implementation of continuing education programs for health providers.

## Educational Expertise

One of the useful activities of the Regional Medical Programs was to design and conduct conferences and workshops aimed at the further development of project and core staff. There has been an attempt in many of the regions to add individuals to the core staff with responsibility for continuing education. The dearth of such individuals with preparation in both health and continuing education has been a problem. The criteria for selection have varied from region to region. Often a health professional with interest in continuing education has been selected with the expectation that he will grow into the job. In a number of programs an individual with a background in psychology has been employed. Such individuals tend to work more in the area of evaluation than program design. (This means, of course, that the evaluation is *ex post facto* – probably poor design and certainly poor evaluation.) The addition of one of several individuals offers no lasting solution to the problem of securing experties for program development.

The 1969 Galaxy Conference on Adult Education provided an opportunity to examine continuing education for the professional [2]. Conrath's presentation cites elements stressed by Regional Medical Programs of critical importance to continuing education in other fields [1]. Although geared to the many professions, particular presentations related to nursing, dentistry, and medicine. Such a highlighting of health concerns has sparked further interest in the preparation of individuals for the exacting continuing education role within health manpower.

The American Hospital Association has concerned itself with continuing education for a number of years. The present thrust is to develop a model to demonstrate the value of a hospitalwide training department. Such a model if replicated will ultimately call for professionally prepared health-manpower educators.

Increasingly, the graduates of higher adult education programs will become available, and some of these may have a health background. More specifically, universities are also creating graduate programs for health professionals who wish to become specialists in continuing education [16].

All who see continuing education as an issue of national concern relating to health-manpower effectiveness must interpret to universities the pressing need for the development of professionally prepared continuing educators for health manpower. Regional centers for this purpose may be the answer. The Sections on Continuing Education for the Professions of the National University Extension Association, the Adult Education Association of the U.S.A., and the Association of Professors of Adult Education can be allies and provide expert guidance to this end.

It is obvious that not all universities will have the interest and strengths to develop such a program. Here the regionalizing of resources can have significant impact. Certain critical questions should be raised.

> Does the university have departments, schools and colleges which permit study of the following fields, as well as preparation for those who wish to enter them? (1) Education, (2) Adult Education, (3) Health Sciences – Health Professions.
>
> Does the university have an extension arm through which the total resources of the university may be brought to focus on the problems of the state, and the learning needs of its citizens?
>
> Does the university have a residential center for continuing education where integrated life and learning experiences can provide for successive and progressive growth?
>
> Does the university now have a graduate program for preparing continuing educators for health manpower?

The naive assumption that any university or college can develop the needed program of study simply because it is a university will not serve. Relatively few have all of the strengths but some possess more than others and will be able to move more purposefully, rapidly, and responsively in this crucial area.

Placing the responsibility for continuing education within the university does not mean that all programs will be campus-based. To be effective continuing education must often reach to where the learner is, as close to practice as possible, ideally within practice.

## NEEDS: BASIS FOR PROGRAM

An adage borrowed from adult education can be applied to continuing education for health manpower: WHATEVER THE PROGRAM, BASE IT ON NEEDS. This imperative presupposes a technology of need identification. Some of the elements of this are developed in several other chapters in this book.

In health services the *health needs of citizens* are the primary focus. Thus it is evident that continuing education of health manpower is not an end in itself but a means to a specified end.

### Needs of the System

Planners, policy-makers and administrators tend to look first at the needs of the health care system. They have sought to identify the need for health manpower, for more health manpower, for particular kinds of health manpower, for more adequate distribution of health manpower, and for the creation of new breeds of health manpower. They have been concerned with the needs of the system for men, money, and materials. They have addressed themselves with vigor to strengthening and extending what is effective and weeding out what is not. In so doing they are responsive to deficits of system.

The basic assumption has been that while there are shortcomings the system is basically sound and worth preserving. There is value in such an approach. But if used alone, it becomes at best a patchwork. It supports the belief that temporary superficial overhauls (hopefully, at long intervals) are all that is required. It leads to a fragmented rather than a comprehensive view. It often reflects the tunnel-vision of vested interests and the preservation of traditional approaches which may be neither economical nor effective.

Examination of the system *can* yield important information as to the need for cooperative relationships, and areas of deficit and duplication, and the need for the dissemination of new knowledge to those who are a part of the system. An educational program based solely on the needs of the system of health-service delivery – or the needs of an institution or agency – is doomed to be inadequate.

Needs identified by others may be considered *external* by the learner. They may lack congruence with needs that he recognizes. Attempts to force unrelated learning may generate feelings of hostility, resentment, evasion, or passivity which defeat the goals of the system, institution or agency, and possibly defeat the learner as well. Without attention to the needs of the learning clientele the program is in danger of being considered irrelevant and ineffective by the intended participants.

## Needs of the Learner

Learners are quick to sense misdirection when they are ruthlessly bent to the needs of the system. The distinction must be made that for adult education the *learning needs* are the primary focus.

Both the adult educator and those involved in developing and implementing programs of continuing education must remember that the adult is usually a voluntary learner (as opposed to the compulsory child attender in school). Even when the power to mandate involvement in continuing education exists, it is clear that the content will be filtered through the screen of the learner's own self-image before it affects his behavior.

He asks such questions as: Will this learning help me? Is it relevant to my work? Will it add to my body of usable information? Will it sharpen my skills, enhance my competencies? Thus continuing education is not usually perceived by the learner as an end in itself. Among health manpower, it is secondary to the primary role of provider of health services.

The adult learner may ask the converse: Does this learning threaten me? Is it too difficult – too complex – for me to understand or use? If it threatens me, how do I defend against it? Everyone who has taught adults knows, that the defense system is well established and often well masked! Perhaps the most frequently used defense is to drop out of the educational program.

Knowles puts it succinctly when he defines an educational need as "something a person ought to learn for his own good, for the good of the organization, or for the good of society."[18, p. 25]

Simplistically, the difference between what a person should know and do and what he actually does know and do indicates an educational need. In the world of work the training need is sometimes stated as the difference between present competency and desired or required competency. It should be remembered that "required" does not always signify a requirement external to the learner. The highly professional person requires it of himself, or accepts as valid the standards of practice determined by his professional group or his colleagues in the arena of practice. As a professional person he may have joined with others in developing the standards. Across the spectrum of health manpower the self-directed learner sets his own requirements. Thus he provides his own self-motivating force.

## Learning Needs Identification

A variety of approaches may be taken to identify learning needs. Learners and potential learners may be interviewed, observed, tested, subjected to performance appraisal, skill inventories, and asked to respond to questionnaires. Sweeping organizational analysis may be conducted encompassing the review of records and reports (i.e., turnover, instability, absenteeism, terminations, disciplinary actions, breakage, incidents, accidents). Documents may be reviewed (i.e., tables of organizations, policies, procedures). Occupational-job-task analysis, time-and-motion studies, work-flow patterns, cost effectiveness, productivity, and the absolute factors of morbidity and mortality rates may be examined. Groups may be formed for purposes of problem identification. (See Ann Lewis' chapter "The Use of Analytical Techniques to Determine Health Manpower Requirements for Educational Planning" in this volume).

The literature gives access to authorities not readily available, and can provide need indicators. Experts, specialists, in the field may be consulted. Not to be overlooked or discounted as expertise is the discriminating judgment of the continuing educator for whom each teaching/learning experience is a cumulative and significant yield in terms of need identification.

Increasingly most Federal and state programs are giving more emphasis to identification of "deficiencies found in the realm of practice, rather than on what a health professional thinks he may need." [19]

## Wants, Interests, Needs

As with other adults, to health personnel the most promising approach is through the interests, wants and the needs each can identify – the perceived needs, the felt needs. Further, since many needs are unrecognized, effective strategies of need identification must be developed and used. The providers of health service must be helped to recognize additional needs and to participate in further learning to meet them. Thus it is possible for educator and learner or learning group to become involved together in identifying needs which then create an interest in need meeting, and ultimately, behavioral change. It should be remembered that wants, interests, and needs are not static. The fact that they are in flux provides an essential dynamism for continuing education. Repeatedly it has been documented in the annals of program planning that behavioral change is more easily achieved when the adult is aware that the educator designing the learning experience is giving the most careful attention to his wants, interests and needs.

When learners help to construct the program, they have a greater stake in its success and work consciously toward the fulfillment of program objectives. Adult educators see program planning as a major professional responsibility. When joint planning is carried out needs are translated into objectives. Involvement is secured and deepened, and a mutuality results in which the educator draws fully on his expertise in behalf of the student, who in response brings his best effort to the learning process.

In a sequential program of continuing education it can be expected that each successful learning experience will give rise to new interests, wants and needs. The individual thus generates the continuity for his own learning – and it can in fact become life long.

When institutional goals, societal goals and learner goals are brought into congruence, a climate for learning is created. Without this congruence concerted action toward the larger goal is not possible.

## PRIORITIES

There is an almost unlimited range of programming possibilities for health manpower. Many alternatives must be examined. Establishing program objectives calls for a selection process, and a determination of priorities. The inevitable, overriding question is what *should* be done? The ideal world must be merged with the actual. The limitations of the actual world force further questions. What can be done? What should be done first? What other things must next be done?

One of the most interesting, important and often painful experiences is the setting of priorities. This holds true for any decision-making group in which there is a high commitment to goals. For many it has been the first foray from the mother houses of their professions into a comparative analysis of the importance of the goals of the separate professions. This has been accomplished in the presence of and with the participation of consumers, whose judgments and values may differ markedly.

### Dangers

Ranking goals and projects in order of importance means that some things are judged to be of more, while others are of less importance, or urgency. The concern has been that those which are accorded less importance are assumed to be *not* important, or urgent. Accordingly the fear has arisen, which is often justified, that decision-makers will simply eliminate from consideration those priorities placed at the bottom of the list.

It is obvious that those with vested interests can influence the ranking by assigning the heaviest weight to goals and objectives that generate particular programs. This fact points up that no matter how scientific the procedure appears for arriving at priorities, the final choice will not be scientific but human. We are thereby presented with another, and perhaps the most telling justification for life-long learning.

Priorities serve to guide the allocation of present resources, of additional resources, as well as the reduction of resources. (Allocating new resources is fun. Cutting back on resources is painful.) The hard fact of reduction of resources has great and serious impact on program. It causes a search for whether any of the program demands can be enabled. Less well understood is that financial cuts call for a drastic *redesign* of education programs. A new statement of objectives must be defined which is capable of achievement with the reduced resources. All this demands a further and heavy time-commitment for educators and health providers who have already invested much in the original program design. It forces the examination often undertaken by the regions as to whether a similar investment of time in actually teaching or learning, or providing health services, would have produced more significant outcome. It sometimes has resulted in emasculated programs which if presented originally in the revised form would have received low or no priority.

The need to establish priorities in continuing education is as desirable as it is inescapable. A rigorous and persistent focus on the health needs of citizens will ultimately filter out priorities in the area of the greatest need, offering the expectation of productive results. When a new program becomes operational and stabilized, planners may then turn their attention to the next priority which will guide further program development.

## OBJECTIVES

Over the country a curious thing has occurred. Disparate groups of people with concern for human services have assembled around planning tables. A plan is conceived. Strategies for fulfilling the plan are considered. The educational approach emerges as a major instrumentality, at which point an antiphonal chorus develops: "First, we must state our objective!"

Thus has been identified the need for a clear-cut, understandable sense of direction for the educational program to assure that the ends are achieved. Thus in their own way each group arrives at a basic premise, long accepted by educators, that curriculum/program development must be governed and guided by objectives.

Decision-makers will be primarily concerned with broad purposes. With educators, they will be mutually concerned in determining comprehensive program objectives. Educators and learners will be primarily concerned with learning objectives. All are concerned with outcome.

When objectives are determined, all else relating to the learning experience falls in place. Objectives do not spring from thin air. They are derived from societal and institutional goals which the continuing education thrust is expected to help achieve.

The societal goal is health as a citizen's right. The system goals relate to health services which are to be available, acceptable, accessible, appropriate, and economical. The institutional goal is to provide continuing education which will be used in concert with other strategies in achieving the broad health goals. Individual goals are fashioned from aspirations.

The dignity and worth of the individual is a value which forces the educator to consider the potential of the individual and what he can become. Continuing education for health manpower contributes to this when it assists the individual to fulfill his potential as a provider of health services. Both the individual and those who facilitate his learning in the field must recognize that attaining and maintaining full professional/occupational competence is but a part of life-long learning. The individual must be encouraged toward self-actualization in all areas of his life, while at the same time recognizing that in each area there are values beyond himself.

Philosophy, as defined by William James, is a persistent attempt to think things through. Dewey adds the dimension that philosophy must eventuate in action. An activated philosophy can generate the drive to be found in Federal and state and local programs which lead to discernible outcome.

Important as are the objectives of the comprehensive program, effectiveness will be measured by the sum total of the success of separate programs which make up the whole. Hence, educators and learners take up the refrain, "First, we must define our objectives." Sometimes it appears that hammering out statements of objectives is the major effort in designing a learning experience.

Learning objectives are about the learner. They state what the learner is expected to achieve from participating in the learning experience. Objectives becomes a standard against which the learner can measure his progress. They provide direction and feedback to the learner as to how well he is doing in moving toward the accomplishment of learning objectives. Objectives can also serve feed forward. They indicate what the participant should undertake or point to the next sequential step. The objectives in toto set forth a desired state. The individual, with such assistance as required from the educator, assesses his need as he compares his present performance against the desired level. Guided self-analysis becomes an essential process in adult learning leading ultimately to independent self-assessment and self-directed learning.

Peer review may be sought by the learner or may be invoked by a group working and learning together. The objectives become the standards for performance appraisal. When the review is carried out in terms of the objectives by those whose daily experience involves the same activities as the individual whose performance is being examined, it becomes highly relevant. (This point is developed in the chapter in this book "Priorities and Data Bases: Their Relation to Continuing Education.")

## BEHAVIORAL OBJECTIVES

Behavioral objectives have particular significance in the field of health where the provision of service is in fact a behavioral activity. Behavioral objectives explicitly state the desired learner behavior and evidence of achievement is specified.

Behavioral objectives embody an action: what the learner will be enabled to do that he was unable to do prior to the learning experience. They indicate a context in which the action occurs. The objectives specify how the evidence of behavioral change is to be demonstrated and what constitutes an acceptable performance. The objective may also include a time span within which the above is to be achieved. Packing all of these elements into one tidy statement is not easy.

Converts to the behavioral approach tend to become evangelistic. It is so easy to *describe* a meaningful objective and all its parts and the purpose it serves. To *state* a meaningful and appropriate objective for a learning experience is more difficult.

In his fast-reading little book on instructional objective, Mager says, "If you give a learner a copy of your objectives, you may not have to do much else."[20]

Knowles comments irreverently on the above. He affirms the truth of the statement, but for different reasons. He says, having worked through the book (and being at odds with its concepts), ". . . .that by this time the student, if he is an adult, will have disappeared." [18, p.286]. Knowles' statement might be extended to cover the disappearance as well of some of the adult educators.

### The Government Push

Tremendous pressure has been mounting from funding sources at the national level that objectives be stated in behavioral terms. Most of the program departments with money to dispense have sponsored conferences on writing objectives. An inordinate amount of time has been spent in briefing the health contingent on the writing of behavioral objectives. It becomes even more difficult when consumers also must be oriented to this approach. Many fail to see the advantage in such an exercise. Others see it as a technical task to be delegated. Many handle frustration, persist, see the light, enjoy the exercise, and become surprisingly proficient.

An outstanding example of the medical-educational-consumer meld is to be found in the Nationally Organized Collaborative Infant Project of the United Cerebral Palsy Association, Inc. The Advisory Council, as well as the collaborating centers where staff members are predominately health providers, after a two-year exposure are able to whip out outcome-oriented statements of objectives for each new program dimension and protocol. They are helped to this end by the useful and directive forms provided by the Bureau of Education of the Handicapped. (See figure 2.)

## EVALUATION

Evaluation of the comprehensive continuing education program is based on the evaluation of its component parts. Evaluation is inherent in program design and should be continuously ongoing.

In program development evaluation is a strategy used to determine whether the stated objectives have been achieved. It involves both measurement and appraisal. Frequently it is listed as the final step in educational program planning. Since evaluation must be carried out in terms of the objectives of the program, the methodology can be developed almost simultaneously with the determination of program objectives. For this reason evaluation will be considered here. If the objectives are well-defined and

## DISTINCTION BETWEEN GOALS AND OBJECTIVES

| GOALS | OBJECTIVES |
|---|---|
| Show general intent and direction | Some specific intentions with measurabl indices and time limits |
| The project will improve language development in young handicapped children | To improve, beyond normal expectations, the receptive vocabulary and complexity of expression in retarded children in our center by June 1, 1973. |
| The parent program will increase parental involvement with children | To increase over baseline performance parental verbal interaction (non-hostile) with child by June 1, 1973 |

## DISTINCTION BETWEEN ADMINISTRATIVE OBJECTIVES AND OUTCOME OBJECTIVES

| ADMINISTRATIVE OBJECTIVES | OUTCOME OBJECTIVES |
|---|---|
| Useful for program management and progress reports | Represent final statements of expected benefits from the project. Final report materials |
| Counseling group for parents that meets once a month during 1973 | To increase parents' personal, non-hostile interactions with their children by 25% over baseline by June 1, 1973 |
| To hire three qualified speech teachers and two aides to deliver service to the children by May 1, 1973 | To improve by a statistically significant amount the expressive language skills of children during this school year |

figure 2*

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*Gallagher, James; Suries, Richard; and Hayes, Andrew. "Program Planning and Evaluation." *First Chance for Children, Vol. 2* (Technical Assistance Development System, Frank Porter Graham Child Development Center, University of North Carolina, Chapel Hill) Used with permission.

concise they support criteria for evaluation and can become in themselves, with minor modification, evaluative tools.

The most earnest effort has developed not only to provide continuing education but also to increase its effectiveness. *Number* – the quantitative index – is no longer sufficient in an evaluation of health service. Neither can numbers of participants in planned learning experiences be accepted as a quality index in education. More stress is being placed on evaluation of the ultimate impact of continuing education. The emphasis on outcome should not be interpreted as an abandonment of process. Arriving at results-oriented performance calls for the most exquisite understanding and implementation of process.

> *Dictum:* " . . . .if a thing exists it exists in quantity and can be measured; if a thing exists, it is evident in behavior, and can be described and recorded."

The foregoing statement, derived from behavioral psychology, weighs heavily on administrators and educators alike. The emerging technology seems to offer promise of achieving measuring, describing and recording. Increasingly the behaviorist approach is being examined and utilized to a varying degree by those in the health field.

The dictum seems so direct and simple. It has become an oft repeated litany – authoritative and directive. But application is not simple. Extensive evaluation along these lines calls for an allocation of time, money and manpower which must come out of the presently available pool of resources. It is important to point out to those planning and implementing continuing education that evaluation is an arena of controversy which distributes itself somewhere along on a line drawn between the behaviorists and the humanists.

Knowles thinks that evaluation has become a much over-emphasized sacred cow which has resulted in an underproduction of "practical feasible, artistic evaluation in terms of program review and improvement." [18, p. 219]

There are real dangers in a ritualistic approach to evaluation. A passage through the required steps, in response to demand from regional or national levels, will do little to raise the quality index. Limiting evaluation to *measures* may blind the evaluator to the innovative and creative for which measures have not yet been developed. The capacity of the learner for growth may be undersold in specifying as acceptable a level of achievement far below his ability to achieve. The educator may succumb to developing program only in those areas where the outcomes are easy to specify and lend themselves to simplified measurement, thus shutting the door on the breakthrough kinds of programs so needed in the continuing education of health manpower. There are unanticipated results that somehow must be reflected in the evaluation.

At the other end of the continuum is the adult educator who says that the very continuance of an educational program is sufficient evaluation. This point of view derives from the open system of adult education typified by the voluntary involvement of the learner. Since a person is free to leave, the satisfaction he experiences in the educational program at the time or later and his persistence in pursuing further educational activities is equated to a sufficient evaluation of the worth of the program.

During the teaching/learning interaction the chief value of evaluation is to redirect learning. Instrumented learning tools which provide focused feedback to the learner and peer review are developing as significant evaluative procedures. They are also an important part of the learning experience in their own right.

Fortunately it is unnecessary to assume an either/or position. There is general acceptance of the desirability of evaluating outcome. Duel's report on Federal training provides some insights.

> Certainly within the realm of present knowledge there are many outcomes of training and education which cannot be effectively assessed. Time is only one of the many factors which complicate the problem. Is the result of training and education applied immediately, in one year, in five years, in ten years? However, because the full impact of training and education cannot be assessed, this does not mean we should ignore that which is already measurable through known techniques.[5]

Within the total mass of the compounding literature of evaluation are recorded the philosophies, theories, data drawn from research, methodologies, as well as "how-to-do-it" handbooks. The reader is encouraged to sample the field thoughtfully and discriminatingly. The approach should be selected on the basis of what seems most appropriate within the operational constraints of program or institutional setting.

## Organizational Evaluation

Within Federally funded projects there is an insistent demand for rigorous evaluation of all programs (including continuing education) in terms of outcomes. This is understandable, since government agencies are called upon to review continuously their activities and periodically provide justification that the tax dollar has been well spent and that the program should be continued. Evaluative procedures designed *after the fact* will not serve these ends. Neither will they provide a sound base for program revision or improvement.

Preplanned evaluation can serve to guide operational improvements at all levels. It can be used as a device to monitor and control activities to the end that they conform to preestablished and mutually-agreed-upon standards. It can provide a basis for program expansion, redesign or re- direction. Increasingly, the management-by-objectives approach seems to offer the administration such a tool.

A more advanced technology of evaluation is required. The research-based approach serves an important purpose in defining further the emerging methodology. It should be pointed out that the rigorous research design is not always necessary to determine program effectiveness. In the last analysis if education is subsidized by the tax dollar (or the patient's dollar) evaluation should benefit the citizen.

## CURRICULUM/PROGRAM

The curriculum in continuing education is often referred to as a program. Program encompasses all the offering of a given institution or agency. The term is used to describe single offerings as well. Program suggests a greater flexibility of format and content directed toward the special requirements of adults. Governed by objectives the program stresses the expansion and extension of the knowledge base, the development of skills, enhancement of competencies, and the promotion of attitudinal change. Broad in nature and scope, the related educational offerings should enable the individual to identify and participate in those which will help him meet identified learning needs. Self- directed education is the goal of continuing education. The essential continuum is provided by the learner himself as he selects what he sees as most useful to him in terms of his own learning needs.

In continuing education new learning experiences are based upon prior preparation and experience. A spiral curriculum is developed which loops back on itself to allow for reexamination of basic ideas. It then winds upward to higher levels in extending and expanding loops leading to a more complex use of knowledge and skills.

The concept of course sequence is not as significant as participation in progressive learning experiences in which each cycle enables the learner to enter a new but related cycle.

## CONTENT

"All learning is learning something" – MacGeorge Bundy.

Each field has identified a body of content. Much of it is held in common. Sharing it as it expands and amplifies becomes a primary mission for continuing education. With the emphasis in adult education on learner needs, the content to be offered may seem less important. For health manpower the subject matter generated by the advance of science is crucial to the quality of practice. A broad sector of the health community must be involved and assistive in the identification of relevant content. The most recent knowledge must be examined for its feasibility and practicality for application.

It is in this area that expert judgment must be solicited in terms of what the individual provider should know and be able to do, in offering services at a level of safety and therapeutic effectiveness.

Curriculum development in primary and secondary schools took on an entirely new look when physical, biological, and social scientist at the highest levels involved themselves with classroom teachers in developing the curriculum and its content. The isolationism in their research or a specialty field should not be permitted to wall off the potential contributors to a similar mix in behalf of health service.

## FORMAT

The variety of formats for adult education serves to distinguish it from the education of children and youth. For the young, and in the halls of academia, the usual format is a *class*. While the class is utilized in adult education, it is only one among others to be considered.

Format specifies how the participants are to be organized for the learning experience. Formats differ in relation to the number of people involved and the size of the group. It is helpful to think in terms of formats which are individualized on the one hand or collective on the other.

The "group" and group methods are much used. Sometimes they are also "used" – regarded as a kind of near-physiological entity. We should remember that no urgency or discovery should blur the awareness that the individual is the end and the group a means.

Individualized formats are of great significance in the continuing education of health manpower. The self-directed learner capable of systematizing and assuming responsibility for his own learning is one of the "hoped for, planned for" outcomes of all education.

Examples of individualized formats are counseling, the tutorial, coach-understudy, correspondence and supervision. In medicine and certain other areas, externship, internship and residency are sometimes so classified. (Self-instructional approaches are discussed in more depth in the chapter "Life-Long Self-Directed Education.")

Institutes, conferences, workshops, short-term intensive courses and meetings are the most frequently used collective formats in continuing education. The purists in adult education offer definitions for each. In practice many people tend to use the terms interchangeably. A precise definition offers a source of structure for the educator as well as the learner. In a broad way it serves to clarify the relation of teacher/learner and indicates what can be expected in terms of opportunities for participation.

*Institute.* Historically in the United States this term is associated with teachers – teachers' meetings for the purposes of instruction. For many people it connotes the remedial, "brushing up" and closing of informational gaps. In adult education an institute is more formally organized than other formats in the same family. It is educator-controlled, provides less opportunity for active learner-participation and stresses the informational exchange. Institutes are usually of one to three days in length. The institute is frequently used in adult education as the first or introductory offering in a sequence of changing formats which allow for increased interaction.

*Conferences* are structured but usually less formal than institutes. They are concern- or problem-centered and offer more opportunity for learner-participation. A conference involves the utilization of a greater variety of instructional techniques than does the institute. The duration of the conference is similar to the institute. The opportunity for learner-to-learner interaction is provided for in the structure, which also maximizes informal opportunities at "coffee breaks" or "stretch breaks," meals, and live-in situations. Managing a conference involves not only the organization of people but also the organization of steps in a cycle as depicted by Rindt[29]. (See figure 3.)

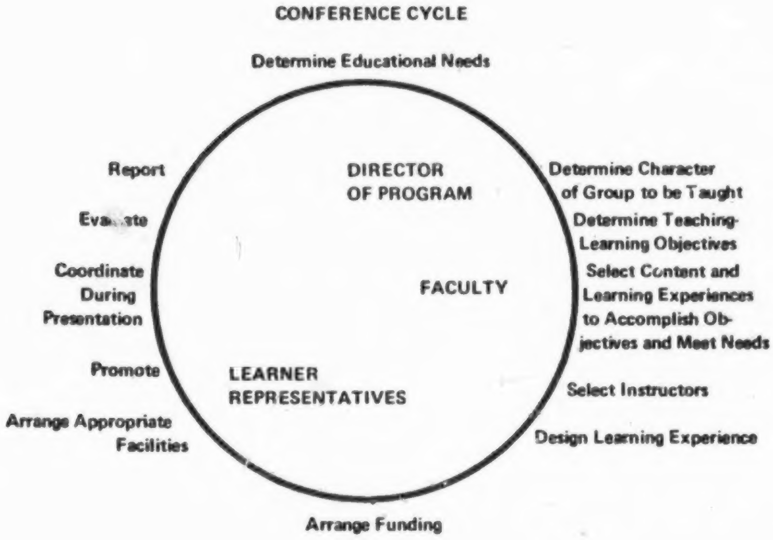

CONFERENCE CYCLE
Determine Educational Needs
Determine Character of Group to be Taught
Determine Teaching-Learning Objectives
Select Content and Learning Experiences to Accomplish Objectives and Meet Needs
Select Instructors
Design Learning Experience
Arrange Funding
Arrange Appropriate Facilities
Promote
Coordinate During Presentation
Evaluate
Report
DIRECTOR OF PROGRAM
FACULTY
LEARNER REPRESENTATIVES

FIGURE 3
Adapted from
Kenneth E. Rindt, *Handbook for Coordinators of Management and Other Adult Education Programs,* University Extension,
The University of Wisconsin, Department of Commerce,
Management Institute

*Workshops* maximize the active participation of each member of the group in interactions with one another. The learning derives from the work assigned and accomplished. The educator serves as enabler, facilitator and resource to the group. A workshop is expected to produce a product and may be of longer duration than an institute or conference. Often a series of workshops involving the same or different individuals is required for task accomplishment.

A group made up of more than 50 people is considered large for adult educational purposes. As educators become students of group dynamics and extend their understanding of group process, it becomes possible to achieve learning ends by creating small groups within large groups for purposes of discussion, problem-solving, internalization and synthesis.

Formats in common usage for very large groups are the convention, the congress, the assembly, and the forum.

> *Convention* is exemplified by annual meetings of professional and other organizations. In plenary and separate, smaller sessions, they attempt to educate their members.
>
> *Congress* is exemplified by The Health Congress jointly sponsored by the American Hospital Association and the Catholic Hospital Association or the Socio-Economic Congress sponsored by American Medical Association. Such an educational attempt cuts across professional/occupational lines and participants to a congress, as representative of particular bodies, are expected to carry back information to others with whom they work.
>
> *Assembly*, exemplified by the Assembly of Constituent Leagues of Nursing, has as a primary purpose the dissemination and exchange of information, often with solicited reaction and feedback.
>
> *Forum*, commonly exemplified by a lecture series or film forum, is often used for the expression of opinions on controversial issues.
>
> *Course.* Since most readers have a wealth of personal experience with "courses" the term is used here to point up how difficult it is to separate method in which people are organized from learning experiences and the selection of techniques.

It should also be noted that the term *method* is used by many educators in the sense that format has been presented here. The brief reference to the degree of participation suggests another classification – active or passive. Learning, however, is an *activity.* If any of the foregoing formats are employed, learner-involvement is essential to learning. It may range from active listening to active interaction and transaction, but in all cases it is active. The activity that matters is what goes on inside the learner.

## TECHNIQUES

The educators of childhood and youth have lasting impact. It is a shattering truth that teachers tend to teach as they were taught. The subjective *past* experiences of today's teachers pattern much of today's teaching behavior. Often teaching within health manpower is in the hands of clinicians who have not had opportunity to study educational strategies or come to know the value of variety in the teaching techniques. The lecture continues to be the most commonly used.

TECHNIQUES ARE THE WAYS IN WHICH THE EDUCATOR FACILITATES LEARNING. If some ways are better than others, selection must not be left to habituated response.

The health-care field within its separate groups has hallowed traditions. Keeping alive a teaching approach because it is traditional cannot be justified.

Of equal concern is the fadism which sweeps the field. For instance, the enthusiasm for "games" and "encounters" should not sweep away older tested techniques which have been proved effective.

Alexander Pope offers this wisdom which would appear to serve: "Be not the first by whom the new is tried, nor yet the last to lay the old aside."

It is a teaching responsibility to select the particular techniques which will advance learning. The choice is guided by the objectives, the appropriateness to the learner, the content to be presented, the situation in which learning is to occur, and the available resources. Discriminating selection requires great sensitivity to all aspects of the teaching/learning process.

Much will depend upon the preparation and professional prowess of the faculty. No one technique should be used to the exclusion of others. Nor should a technique be used inflexibly. The ability to utilize a variety of techniques is the mark of the skillful teacher. Using them appropriately is the mark of the artful teacher.

Techniques must be understood as far more than a bag of tricks. Adult learners are easily seduced by good entertainment. Technique, the hardware, the "gimmicks" must not overshadow the fact that each is a means to serve the purpose and end of instruction. If technique has much to do with what is actually learned, it does so to the extent that the science of learning is effectively put to work.

As with skill training in any area, new techniques are acquired through practice. In the beginning the teacher may be so conscious of the technique that the idea behind its use recedes. Over time, the teacher develops his own style. There is no one right way to teach. A willingness to try the new is one of the ways to improve instructional quality. The search for better ways should be continuous.

Techniques are the major vehicle for establishing the relationship between teacher and learner, and between learner and what is to be learned. In a very real sense techniques reflect not only the personality but also the philosophy of the teacher. The judicious selection and astute utilization of appropriate techniques enables the teacher to come to know the student.

The excellent teacher so integrates technique and media in support of content that they are almost indistinguishable. Learners depart from the learning experience not knowing how it was done but very conscious that learning has occurred.

Teachers who are most helpful appear to be those who have mastered the art of learner-centered techniques which call for high degree of involvement and commitment from the learner.

## The Group

Adult education is an adventure in involvement. There is first of all the involvement of the learner in his own learning and the involvement of the teacher in helping him to learn.

Most systematized learning in health care takes place in a group setting which spurs the involvement of learner and teacher with the group. The learning group offers enrichment, motivation, support and amplified resources. In addition it has the obvious advantages of the economy and efficiency of the collective design.

The group as an appropriate setting for learning is well established in our culture. The present decade has seen the group emerge as an object for study as well. In either case it is clear that the learning group has great effectiveness in developing attitudes and values which lead to behavioral change.

Teacher and learner must understand learning as an individual experience prior to understanding learning as a group experience. Many of the significant understandings are derived from the study of interpersonal relationships and group dynamics. The application of such understanding to teaching/ learning involves the purposeful use of group process in which learning results from a transaction among people.

Discussion is the fundamental technique in group process. Discussion does not eliminate but modifies the use of lecture. There is still use for major lectures in continuing education for health manpower. Many teachers now develop lecturettes for brief presentations of an essential body of information, which are followed by discussion. The shift, which is visible now, from the lecture as the predominant means of transmitting information to discussion reflects a distinct change in philosophy. It involves some role reversal for both teacher and student.

In the lecture the learner functions as a semipermeable membrane through which a diffusion of some of the knowledge is accomplished. In discussion he becomes an active participant. He is a valued member of the group, capable of growth through critical thinking, problem-solving and discovery learning. He is able to test his thinking, gain new insights, see new relationships, reflect, synthesize the content and internalize it. In short, the learner learns – and the learning is active through involvement.

The techniques of group process are interesting for learner and teacher alike. Some of them are such fun that it is difficult to terminate them when the learning goal has been reached.

Again the reminder that techniques are a means and should be used as such. There is much helpful literature relating to techniques which facilitate group process and discussion within it.

Educators have repeatedly pointed to the danger of over-emphasis on group approaches. The urge to conformity is strong. The creative individual may not wish to be a part of a learning group. He may be unable to function in it or the group may refuse to assimilate him.

Collective approaches are necessary in the health field. But the learning will still be accomplished by the individual. Self-directed learning is to be encouraged and will often be the educational route of choice. (Two other chapters in this volume, "Life-Long Self-Directed Education" and "The Health-Care Practitioner as Instructor" have much to say on this theme.)

## INTERPROFESSIONAL, INTERDISCIPLINARY, INTEROCCUPATIONAL

Increased specialization gives substance to the glib phrase, "He knows more and more about less and less." Yet the more preoccupied one is with a specialty, the greater is the danger in the health field that learnings remain within the specialty and do not become integrated in the arena of general practice. Heroic educational measure are called for if appropriate health personnel are to have at their disposal current knowledge for application in behalf of particular patients with particular needs.

An example of such an approach is an evolving new model of cross disciplinary working and learning together.[15] For the past four years occupational therapists, physical therapists and nurses have sought to pool knowledge and skills and instruct each other across disciplinary lines. Together they have assessed the needs of the individual requiring services. Together they have developed a plan of care. The individual whose discipline is most in demand by the patient assumes the responsibility for coordinating the plan. As the main provider of services, he uses his increased armamentarian (gained from colleagues) in behalf of the patient. He has access to his colleagues in particular fields for consultation and further instruction. He may choose directly to involve one or all in the provision of particular interventions at particular times. Advantages of the method are that the knowledge, skills, and competencies of each team member are enriched and expanded. A meaningful continuity of relationship is established between the health professional who is to coordinate the program and the individual requiring care.

A person with multiple handicaps reaps benefits from this approach. The fragmentation of care, the distributions of parts of the body on a system or categorical basis to particular specialists is eliminated. Consistency and follow-through are easier to achieve. The patient is supported by the assurance of a health provider who is fully informed about his condition, and addresses himself persistently to meeting his changing needs as he progresses towards recovery or learns to cope with a chronic condition.

The concept involves role appraisal, re-evaluation, enrichment, realignment, extension, expansion, and to a degree relinquishment. It has been tested in the institutional setting with the minimum team described.

An expanded team, involving physicians, psychologists, social workers, educators, speech and language experts and nutritionists, is testing the concept in five community centers with a clientele of infants who have multiple handicaps and who live at home.

Within the guiding protocols there is opportunity to develop four educational models:

(1) The Infant Curriculum, to maximize learning potential.

(2) Staff Training and Development, which stresses the clinical/educational competencies required to work together in the cross-disciplinary approach and to provide the necessary services.

(3) Parent Education, which enables the parent, or parent surrogate, to sustain the therapeutic impact in the home situation as primary programmer for the child.

(4) Community Education, to create an understanding and supportive and accepting climate for the handicapped.

The central emphasis is, of course, on the educative role of the practitioner – as Hilliard Jason develops it in his chapter later in this volume.

It should be pointed out that, while educational and experience levels differ within the teams, all participants in the projects mentioned had basic professional preparation. Experience with the target clientele ranged from none in the beginning to a few with a considerable experience, plus advanced training and/or graduate education. The differences were bridged by guided analysis of team effectiveness and the development of the design by each team in which they chose to work together. Major learning growing out of the clinical setting and the needs of real infants and their families for whom the team would continue to provide services rendered the experience fully relevant.

Such tampering with role as "specialist" has implications in respect to licensure and credentialing for many of the group involved. Since the moratorium on the development of new categories of health workers is about to expire, Ruth Roemer's chapter in this book "Social Regulation of Health Manpower" has special significance.

When there are considerable differences in knowledge bases, there may be a leveling of presentation which will render the offering inappropriate to most of the members of the group.

Few believe that interprofessional education can be a substitute for uniprofessional education. Many believe that we are not ready for it or that it involves too much risk. Those who have made attempts in this direction know that interprofessional education calls for expertise and the most skillful judgment as to when it is appropriate and for whom it is most meaningful.

When such judgments are well made, risk is reduced and a new dimension is added to continuing education. The multifaceted aspects of health care will force continuing education to move in the direction of interprofessional/ occupational programming[13, 3].

## MEDIA AND TECHNIQUES

There is high enthusiasm in the health field for mediated instructional approaches of an electronic nature. In fact educators in the health area have been heralded for innovative and creative approaches.

The following discussion of media is in no way complete. For instance, there is no reference to the obvious potential of television – that great instrument for mass education.

I am confident that someone, somewhere in the field is attempting to maximize each new approach.

In the plethora of resources available for the educator today the major problem is deciding which ones to use. Some relatively simple questions become guidelines. What is it? Why use it? When is it good? What does it cost? How often will it be used? What are the alternatives to its use?

The world of business has found the production of hardware profitable. Projectors of many different kinds bring a wealth of instructional aids to the support of the teaching-learning process – audio and video recorders and tapes, telephones, radio, television, computers, simulators and models; at first used sporadically, they are now common to continuing education for health manpower.

The worth of such approaches has been demonstrated. While they can be used separately, it is probable that the potential can be greatly increased by articulation with other adult education approaches. They can be coupled with face-to-face contact at intervals with fellow learners and instructors to permit the warm and supportive personal relationship so valued by the adult. Such a coming together is invaluable for instruction. It enables assessment of program effectiveness and provides opportunities for direct learner feedback to the teacher.

Clearly, hardware is of no use in itself. For this reason it cannot be discussed without indicating its place as a support to instructional techniques and strategy.

The early fears that the machine will replace the teacher seem not to be justified. In fact, there are innovative and creative educators who prefer to devote themselves to the development of materials. When they finish one project they are free to turn their attention to a new area in need of development.

Continuing education in the health field more than in any other field has made wide use of the technology which can bridge the miles between instructor and learner or learning groups. The relatively heavy commitment of Federal funds to health has enabled the testing of innovative approaches to utilizing the technology of educational communication.

Interestingly, the cost of the communication lines and the demanding chore of assuring their full use has led indirectly to a multidisciplinary utilization which has in some cases led to interdisciplinary program development. It has also made possible the pooling of resources and the opening of what were formerly unidisciplinary programs to wider multidisciplinary learning groups in need of the same content.

Educational radio, television and telephone networks blanket some whole states and regions and have become spread over various parts of the United States and especially to particular groups.

### Telephone Dial Access Library

The telephone dial access system was designed at the University of Wisconsin by Dr. Thomas C. Meyer [23;24]. The Department of Nursing-Extension's Dial Access coordinated by Anne G. Niles[26; 27; 28] is an integral part of the system. Both systems have been supported in part by Regional Medical Programs. The total library of six- to ten-minute tapes now exceeds 800.

Conceived as a service to health professionals within the state, a telephone call from any phone requesting a particular tape makes information day or night almost instantly available. Other regions have in the past contracted for the service. The library is available to Veteran's Administrations installations, and parts of the Public Health Service are now using the system. Tapes have been purchased for use by other continuing education programs as well.

The general system has application for all health groups and is much used by students. Often the tapes are amplified within a practice setting for small groups of health personnel as a part of inservice education. The potential for patient/citizen dial access in the health field is enormous. Tel-Med is a medical health telephone service in San Bernadino, California. It has been used for similar purposes in Germany, and is operating for patients in the University of Wisconsin Medical Center and several community hospitals. The system can be replicated on a smaller, quite inexpensive basis by institutions that wish to develop in-house dial access. Those considering doing so should be fully aware of what is involved in the design and development of tapes.

The identification of appropriate content, its reduction to a meaningful, well-organized presentation, the choice and accuracy of subject matter, the editorial reviews, the revision and updating, and the presenting voice are elements that constitute the educational challenge. Knowledge in depth is required for the preparation. Skill and time are involved in the development of each tape. The coordination of the program requires a high level of expertise. This program, like others, operates on the coin of the realm. Developing a sustaining funding base has been a serious problem.

## Telephone/Radio Networks

Telephone/radio networks are used extensively by universities in many areas. Here programs can be carried simultaneously via radio and/or telephone. Again RMP has played a part in the development and expansion of programs over these carriers for health manpower. The programs can be initiated from any point in the network by the use of an ordinary telephone handset wired into a private line. More desirable for major presentations is the wiring of a microphone into the system at the point of origin. The voice is carried via private lines to listening stations equipped with voice amplifiers. Enrollees may participate by using the telephone handset for questions or comments or interaction with each other.

Since the first network was created in 1957 there has been marked and enthusiastic development. Wisconsin, Ohio, New York, West Virginia and Minnesota are among the states using the system.

It provides opportunity for developing course work with sequential learning over time. Obvious too is the advantage in the capability of reaching large numbers of people in many locations close to their homes or at their work.

There is danger in a buckshot approach in which programs are aimed into the "nebulous out there" in the hope of benefiting, and the reasonable assurance of reaching, at least some of the listeners. It is necessary to identify precisely the needs of target audiences. Content must then be selected and developed. Specific individuals and groups must be alerted to the offering and rigorous evaluation must be conducted of its impact. The lure of a demonstrably large audience should not obscure the fact that to be effective the programs must be designed with specific audiences in mind. This fact cuts the numbers that may be reached. Even so, the hardware has the same potential for reaching a specific group located in many distant places whose members can learn and apply the knowledge without having to travel.

Increasingly the learners and institutions subscribing or included in the system must search among the offerings in order to identify the ones most useful to particular people at particular times in particular settings.

Funding by the Wisconsin Regional Medical Program helped the Wisconsin Inactive Nurse program to begin. The program is worth examining by professions and occupations composed largely of women, for many of whom child-bearing and child-rearing may cause long periods of absence from the field. WINS was conceived by Signe Cooper. Utilizing the Educational Telephone Network, a listening/participating group of inactive nurses are brought together with experts in the field. Their hunger for learning has precipitated an informal counseling program manned by the coordinator. The verbal presentation is supported with carefully developed packets of supplementary instructional materials mailed to the homes of the enrollees.

Tapes of the programs have been recorded and they provide another way for participation by enrollees who are homebound with family responsibilities. The program is coordinated by Ruth Lutze, who brings special sensitivity to the needs of the inactive nurse.

In its first year, the program was available at no cost to participants. Withdrawal of funding forced an abrupt initiation of a fees structure. During the buildup the Department of Nursing absorbed the loss and funded the program. In excess of 160 nurses now pay fees to enroll. The program has provided a way in which nurses may stay in touch with nursing while fulfilling their primary roles as wife and mother. When they are ready to return to practice, many enroll in departmental refresher courses which include supervised practice. Others enroll in degree-oriented programs and further their education. Over time many find their way into other continuing-education offerings. Thus can be demonstrated that method is in fact a means of establishing a continuing relationship with the learner [30].

Radio and telephone offer the disembodied voice. They easily can seem inanimate to the learner as well as to the teacher who often works without an audience. Study guides, reference materials, the use of appropriate slides, movies and other visuals where the program is being received can augment and spark the presentation.

## Computers

The computer is a more recent entrant into the array of instructional devices. It possesses a unique capability and high potential. One example of use was stimulated by the RMP emphasis on prevention and treatment of cancer. The computer in this instance becomes a planning device for treatment and offers verification on the dosimetry of delivered radiations. It allows various beam-configurations to be considered and a final treatment plan developed and displayed on the viewing scope.

Since many of the cancer radiotherapy treatments are done without the benefit of either a trained radio-therapist or radio-physicist, access to rapidly responsive instruction is essential for radiologists seeking information on therapeutic technique and treatment.

Computerized instruction dating from the first Link Trainer is one of the areas of innovative exploration and use. While costs are high, the impact on behavior at the level of patient care can be tremendous. Readers are urged to keep abreast of developments in this area.

In addition to the highly complex computer there are simplified forms of hardware. The University of Wisconsin has amassed a group of cartridge films to be used in equipment which incorporates projector and small-viewing screen. Easily transportable, the equipment is sent to requesting institutions and can be moved from place to place within the setting to capture the attention of different audiences. It lends itself to small-group viewing.

Cartridge tapes can be used successfully by the mechanically inept. They may be used to present a single concept or a broader, well-defined conceptual focus. They may be brief to provoke thought and discussion or be of such length as to compose substantial segments of a presentation.

## Multimedia Learning

There is enormous and continuing need to communicate specialized information in the health field. Multimedia instructional systems appear to supply one of the answers. Here the instructional system is developed using a combination of media, each selected because of its special ability to effectively communicate the content.

The multimedia instructional system based on the concept of intensive coronary care has received widespread recognition and distribution. Public Health Service grants enabled development at the Presbyterian-University of Pennsylvania Medical Center [21], and supported in part the John Sutherland production. The original system consisted of nine animation/live action color sound films, twenty-nine sound filmstrips, a silent filmstrip identifying features and examples of the most commonly-occurring arrhythmias, an instructor's manual, student workbooks, audiotapes [22] of questions and discussions regarding the films, problem-solving projects, clinical experience, a precourse examination, and a comprehensive final examination. There is a variety of record forms to guide and evaluate student experience and learning and suggested course outlines.

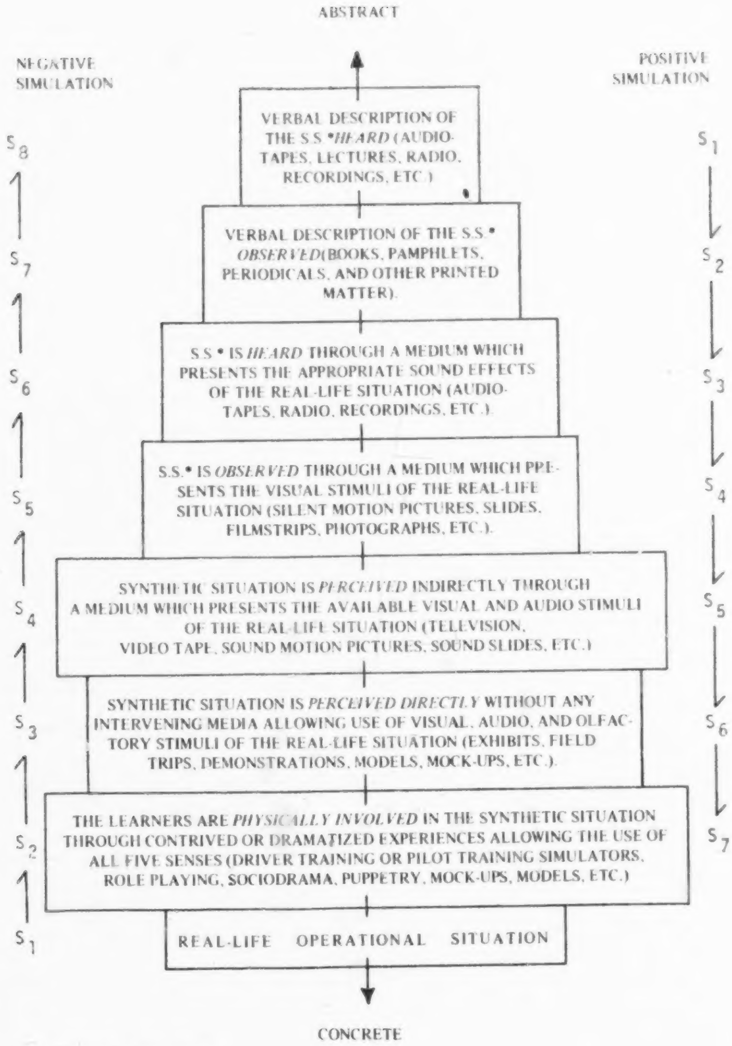
The teaching/learning relationship is prescribed in the materials, and includes lecture, demonstration, problem-solving and preceptor training and self-assessment. ROCOM, which makes additions to and distributes the package, has empaneled experts drawn from the fields of cardiology, cardiovascular nursing education and film production to recommend additions to the system that reflect current thinking.

It is interesting to note that what was first offered as an instructional system is now dubbed a multimedia learning system.

In multimedia systems the audiovisual components are considered more than an aid to the teacher's presentation. If there are sound educational designs, they become a program core and can be used individually and by groups of learners to bring them in touch with the thinking of recognized authorities and a dimension of expertness which may not be otherwise available to the learners.

Continuing education is face to face with the unpalatable need to determine objectively when, and if, a multimedia system can in fact become the major teacher.

Figure 4, which shows a variety of instructional media placed on an abstract-concrete continuum in the form of a pyramid [33] can be used as an


ABSTRACT
NEGATIVE SIMULATION
POSITIVE SIMULATION
VERBAL DESCRIPTION OF THE S.S.*HEARD (AUDIO-TAPES, LECTURES, RADIO, RECORDINGS, ETC.)
VERBAL DESCRIPTION OF THE S.S.* OBSERVED(BOOKS, PAMPHLETS, PERIODICALS, AND OTHER PRINTED MATTER).
S.S.* IS HEARD THROUGH A MEDIUM WHICH PRESENTS THE APPROPRIATE SOUND EFFECTS OF THE REAL-LIFE SITUATION (AUDIO-TAPES, RADIO, RECORDINGS, ETC.).
S.S.* IS OBSERVED THROUGH A MEDIUM WHICH PRESENTS THE VISUAL STIMULI OF THE REAL-LIFE SITUATION (SILENT MOTION PICTURES, SLIDES, FILMSTRIPS, PHOTOGRAPHS, ETC.).
SYNTHETIC SITUATION IS PERCEIVED INDIRECTLY THROUGH A MEDIUM WHICH PRESENTS THE AVAILABLE VISUAL AND AUDIO STIMULI OF THE REAL-LIFE SITUATION (TELEVISION, VIDEO TAPE, SOUND MOTION PICTURES, SOUND SLIDES, ETC.)
SYNTHETIC SITUATION IS PERCEIVED DIRECTLY WITHOUT ANY INTERVENING MEDIA ALLOWING USE OF VISUAL, AUDIO, AND OLFACTORY STIMULI OF THE REAL-LIFE SITUATION (EXHIBITS, FIELD TRIPS, DEMONSTRATIONS, MODELS, MOCK-UPS, ETC.).
THE LEARNERS ARE PHYSICALLY INVOLVED IN THE SYNTHETIC SITUATION THROUGH CONTRIVED OR DRAMATIZED EXPERIENCES ALLOWING THE USE OF ALL FIVE SENSES (DRIVER TRAINING OR PILOT TRAINING SIMULATORS, ROLE PLAYING, SOCIODRAMA, PUPPETRY, MOCK-UPS, MODELS, ETC.)
REAL-LIFE OPERATIONAL SITUATION
S8
S7
S6
S5
S4
S3
S2
S1
S1
S2
S3
S4
S5
S6
S7
CONCRETE

*SYNTHETIC STIMULATION

Figure # 4 SIMULATION THROUGH USE OF INSTRUCTIONAL MEDIA

ADAPTED FROM Stewart, Donald K., unpublished manuscript for Articulated Instructional Media Seminar, University of Wisc. Extension.

aid in the selection of media to fit certain objectives. The placement of a specific medium in a specific slot – as Dale has done in his "cone of experience"[4] – is based on the general use of the medium; the number of senses involved; whether the synthetic situation is perceived directly or indirectly (through media); whether the synthetic situation is observed, heard, or both; and whether the perception involved is the synthetic situation or a verbal description of the synthetic situation. It is relatively easy to place a specific medium by incorporating into it some new features or characteristics that would relate to the criteria used for deciding where to put it on the pyramid of the diagram; e.g., adding sound to filmstrips would move the combined media to the next tier below [32].

The search for the new must not blind us to the continued usefulness of much of the old. The abundance of the printed word is a temendous extension of yesterday's textbook. Microfilm and microfiche bring the libraries of the world and many of the research studies, theses, and dissertations at sight's length to educators, as well as learners. Today's speed-copy machines are a far cry from the spirit duplicators and the gentian violet of ditto machines.

Teacher-developed instructional materials continue to be produced. The instructor's intimate knowledge of his learner's previous educational achievement and experience; his understanding of pace, present ability, and drive; lead to the creation of the most sensitive, supportive and effective materials. The speed-copy machines and the ability to reproduce illustrations as well as print have eased the burden for the instructor and they enable him to provide visually pleasing materials to the participant.

Newly created journals in the areas of health and continuing education have joined the respected old timers. They afford the examination of controversial issues, supply an additional platform for writers, and add excitement and fuller coverage to the field.

The exploration of the possible use of satellites in educational communication has begun recently. The expanded outreach offers exciting opportunity for the present and even more for the future. Telstar has shown us the way in which major segments of the world can be brought together. Educationally there is danger in irrelevant, incongruent material being broadcast. The threat to which we are already sensitized by television is the leveling of cultures. The pressures to the conformity that the media compel may be of serious significance in terms of widespread impact.

A university of the world is now within reach. The concept must be tested against human, ethical, and educational values. The problem of beaming appropriate information to target audiences expands to the largest dimensions. It raises, among other questions, the question of what kind of educators might be required for such an endeavor. Its mind-stretching potential offers an additional avenue toward achieving health for the family of man.

## EDUCATOR/TEACHER

Many references have been made in the preceding pages to the educator/-teacher. The quality of instruction is crucial to continuing education of health manpower. The literature reflects the thinking of authorities concerning the personal and professional characteristics of the adult educator. Most of the comments are equally applicable in the health field.

To a large extent in the early days adult education "grew" its own faculty. Continuing education seems to be emulating this approach, which may be wasteful in view of the larger and more varied opportunities for professional preparation.

A fix on the future compels the belief that continuing education is here to stay. The goal in terms of critical human services will attract many to formalized preparation for the role. It demands additional indepth preparation from those already in the field who wish to make a lifelong commitment to the lifelong learning of others.

The developmental approach will help all providers, and enable the identification of those with special ability for teaching.

The educative individual who is an acknowledged expert in his field has great impact for behavioral change. The opportunity offered by media to develop retrievable presentations can make his special skills more widely available without excessive demands upon his time.

The process of developing an ad hoc faculty – a cadre of experts – is worth close examination. It may be possible to involve these individuals in selected aspects of programs where they will have great effectiveness. The continuity of relationship and the sequence are in the hands of the permanent party. Such an itinerant cadre could be shared on a national or regional level. They can make a major contribution to program effectiveness.

The development and integration of such presentations calls for a high level of ability from the coordinator of the program. An unsupported "one-night stand" will almost certainly be detrimental to the educational outcome.

Specialization will continue in the field of health. The learning specialist and the clinical specialist must forge new relationships in support of the learner/provider. Both will be involved in identification of need. The major contribution of the clinical specialist will be to identify the content of the learning experience. The contribution of the learning specialist will be to design the learning experience. Both may be involved in the implementation of program.

They will embark upon a dialogue punctuated by questions.

Prior to the learning experience they will ask: What are the learning needs? How should they be met? Who will be involved as teachers? as learners?

Following the learning experience they will ask: Have the needs been met? What new needs are created?

What happens next? [12].

The first task of continuing education may be to prepare all providers for the teaching role inherent in practices (i.e., provider/recipient, provider/-family, provider/peer, provider/colleague, provider/community).

Continuing education for health manpower is a goal-oriented activity. The societal goal of health care as a citizen's right is a unifying force which transcends professional/disciplinary/occupational lines. It defines a common ground for the working and learning together that is the essence of continuing education for health manpower.

The learner goal is to continue to enhance his competencies to the end that he finds self- actualization in rendering services.

When the teaching rôle is fulfilled a learning climate is created and the health-care field makes its contribution to the educative society.

## CONCLUSION

Continuing education for health manpower is too important to be left to chance. Health as a national concern calls for new and ever more effective approaches to meeting the health-care needs of people.

The Regional Medical Programs demonstrated that constructive action can occur when a representative body addresses itself to continuing education as an issue of national concern.

Comprehensive planning efforts must be continued. Continuing education must be provided within the educational mainstream. Systematic approaches are called for to eliminate duplication and deficit. Interstate programs, state programs and programs at local levels must become related parts of a coordinated network of continuing educational opportunity. Men and women must be prepared for the crucial role of continuing education in the health field. A funding base must be provided to assure the continuance of sound programming and to allow for further development in areas yet unknown.

### Credo:

The health needs of people engender learning needs in the providers of health services.

The learning needs of providers engender the need for continuing education for health manpower.

Continuing education contributes directly to meeting the learning needs of providers and increases their ability to perform more effectively in the delivery of services.

Thus continuing education contributes to the national goal of health care, as a citizen's right.

# REFERENCES

1. Conrath, Cecilia. "Government: An Active Partner." *Continuing Education for the Professions.* Natresources, Inc. Chicago, Ill. 1969.
2. *Continuing Education for the Professions.* From the Proceedings of the Sections on Continuing Education for the Professions of the Adult Education Association of the USA and the National University Extension Association at the Galaxy Conference on Adult Education. Natresources, Inc. Chicago, Ill. 1969.
3. Cooper, Signe S. and Hornback, May S. *Continuing Nursing Education.* McGraw-Hill, N.Y. 1973. p. 57.
4. Dale, Edgar. *Audiovisual Methods in Teaching.* 3rd Edition. The Dryden Press, Holt, Rinehart and Winston, N.Y. 1969. 719 p.
5. Duel, Henry J. "A Staff Report on Evaluation of Training and Education in Federal Agencies." *Self and Service Enrichment Through Federal Training.* U.S. Civil Service Commission, Washington, D.C. 1967. p. 429.
6. Gardner, John. W. *Self Renewal, The Individual and the Innovative Society.*Harper and Row, N.Y. 1966.
7. Havighurst, Robert J. and Orr, Betty. *Adult Education and Adult Needs.* Boston: Center for the Study of Liberal Education for Adults. 1956. p. 1.
8. Houle, Cyril. "Lengthened Line." *Perspectives in Biology and Medicine.* Autumn, 1967. p. 37.
9. Houle, Cyril. "To Learn the Future." *Medical Clinics of North America.* Jan. 1970. p. 17.
10. Houle, Cyril O. *The Design of Education.* Jossey-Bass, Inc., San Francisco, Cal. 1972. p. 32.
11. Hurst, Willis and Walker, H. Kenneth (Editors). *The Problem-Oriented System.* Medcom Press, N.Y. 1972. 287 p.
12. Hutchison, Dorothy J. "Is Inservice Education Really 'In'?" *Journal of Continuing Education in Nursing.* May, 1970. p. 35.
13. Hutchison, Dorothy J. "Editorial." *Journal of Continuing Education in Nursing.* Sept.-Oct., 1970. p. 4.
14. Hutchison, Dorothy J. "Implications for Teaching." *Critical Issues in Continuing Education: Supplementary Report to the 1971 National Conference on Continuing Education in Nursing.* Univ. of Wisconsin, Madison, Wisc. 1972. pp. 21-22.
15. Hutchison, Dorothy J. *The Cross Disciplinary Approach,* manuscript in preparation for publication. Proceedings of Project MR56-P-70773-2-01, Division of Developmental Disabilities, SRS, HEW to United Cerebral Palsy Association, Inc.
16. The Univ. of British Columbia, Health Science Centre, Vancouver, Canada has been funded by the W.K. Kellogg Foundation to offer such a program. *Journal of Continuing Education in Nursing.* July-Aug., 1971. p. 26.
17. Klus, John. "Time Dependent Knowledge Gaps for Technically Educated People (Need for Updating and Broadening)." Univ. of Wisconsin. Extension, Dept. of Engineering, Madison, Wisc.
18. Knowles, Malcolm. *The Modern Practice of Adult Education.* Association Press, N.Y. 1970.
19. Lang, Norma. "Is Continuing Education in Regional Medical Programs Dead?" *Journal of Continuing Education in Nursing.* Jan.-Feb., 1972, pp. 12-13.
20. Mager, Robert F. *Preparing Instructional Objectives.* Fearon Publishers, Palo Alto, Cal. 1962. p. 53.
21. Meltzer, Lawrence E., Pinneo, Rose and Kitchell, J. Roderick. *Intensive Coronary Care. A Multimedia Instructional System for Nurses.* Charles Press Pub., Inc., Philadelphia, Pa. 1969.

22. Meltzer, Lawrence E. *Intensive Coronary Care: A Multimedia Instructional System for Nurses: Scripts for Audiotapes.* John Sutherland Productions Inc. Los Angeles, Cal. 1969.
23. Meyer, Thomas. "Communications – A Supplement to Medical Library Services." *Bulletin of Medical Library Association.* 1969. pp. 338-342.
24. Meyer, Thomas. *A Study on the Feasibility of Establishing a National Medical Dial Access Information Retrieval System.* Univ. of Wisconsin. Dept. of Postgraduate Medical Education, Madison, Wisc. 1970.
25. Moore, Marjorie A. "Training Schedules for Cardiopulmonary Resuscitation." *Journal of Continuing Education in Nursing.* July-Aug., 1972.
26. Niles, Anne G. *Definitive Dialing: Nursing Dial Access. A Report of the Planning Year and the First Eighteen Months in Operation, September 18, 1968 – March 15, 1970.* Supplementary Report 1972.
27. Niles, Anne G. "A Dial-In for Continuing Education." *Educational Product Report.* June, 1971.
28. Niles, Anne G. "Nursing Dial Access: A Tool for Inservice Education." *The Journal of Continuing Education in Nursing.* May-June, 1972. pp. 39-43.
29. Rindt, Kenneth E. "Conference Cycle" (Figure). *Handbook for Coordinators of Management and Other Adult Education Programs.* Univ. of Wisconsin. Extension, Dept. of Commerce, Management Institute, Madison, Wisc.
30. "Inactive Nurses Keep Updated by a Party Line Refresher." *RN Magazine.* March, 1971. pp. 17-18.
31. Scannell, J. Gordon. *Progress Report of the Surgery Study Section to the Advisory Committee of the ICHD.* June 12, 1970.
32. Stewart, Donald K. "Simulation: An Important Factor in Learning and Retention." Paper developed for Articulated Instructional Media Program, The Univ. of Wisconsin, Madison, Wisc.
33. Stewart, Donald K. "Simulation Through Use of Instructional Media." Unpublished manuscript. Univ. of Wisconsin. Extension, Articulated Instructional Media Seminar, Madison, Wisc.

# The Provision of Inservice Education for Health Manpower

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## INTRODUCTION

Individuals acquire the knowledge, skills and attitudes necessary to perform their functional roles in society in a variety of ways. Some achieve the prerequisite learning for efficient performance through experience in their chosen occupation but for most people preparation for an occupation involves varying degrees of prevocational education in an orderly and systematic way. The more complex the position to which one aspires, the greater the educational component and the longer the time spent in preparatory educational programs. For some occupations little or no preparatory education is necessary but for others, such as the professional fields, the period of preparatory education may require a quarter or more of the life-expectancy of an individual.

Once an individual has embarked upon a specific career, he begins a new phase of education and learning that must of necessity be continued throughout his life if he is to maintain his occupational proficiency. As with the preparatory phrase, the more complex the career the more indispensable is the continuing education component and the more time required to achieve the essential learning. Although some individuals are prepared and able to provide for their own learning continuously throughout life, this condition is not characteristic of most people; consequently it is necessary to provide systematically for learning. This is usually done by educational institutions, by vocational and professional associations or by the employer of the individuals concerned through inservice educational programs.

The continuing education provided by educational institutions such as schools or universities is usually readily available but it is often too general or at an unsuitable level so that it does not meet the immediate and specific needs of those participating in it. The education provided by occupational or professional associations may be more specifically attuned to a particular group but be wanting with respect to the application of knowledge in the setting in which the participant finds himself. Inservice education, on the other hand, can be made available at the time it is most needed with the specific content required applied to the particular work situation in which it is to be used. Thus inservice education can provide functional learning at the moment and in the place in which it is required.

The problems associated with the provision of continuing education are particularly acute in the health fields because of the structure of health service and the variable levels of learning achieved by health manpower. Health services are found in many forms ranging from those provided by individual entrepreneurs to those provided by complex organizations with membership ranging from unskilled or semiskilled to highly educated professionals. Continuing education for the individual practitioner is usually provided more efficiently through self-study and in programs conducted by educational institutions or professional societies. The health manpower employed in health-service institutions can be served more efficiently through inservice education programs conducted within the institution. It is this latter group which is of primary concern here.

## SCOPE

Health-service institutions such as hospitals, clinics or sanitoria are complex organizations that reflect the complexity of society in general. As Campbell[3] notes, they bring

> . . . together in one institution the representatives of many varied professions and occupations who meet and work together to provide health services to a cross section of society. The function of education within the hospital is to make that care as effective and efficient as possible.

Since each health-service institution has its own specific functions in the provision of health care, it has a collection of individuals on staff that perform a variety of tasks within the institution. In order that the institution may fulfil its functions effectively and with dispatch, it is necessary that the members of the staff learn to work together in a manner consistent with the structure and objectives of the institution. Because every such institution has its own particular methods of operating, the required learning for this can be achieved successfully only within the institution. Thus inservice education within health-care institutions is directed to all employees from the professional staff through the paraprofessionals to the nonprofessional and volunteer workers. Only in this way can the institution insure that patients and the community generally will receive consistently high quality health care.

Each class of employees in the hospital staff will have differing roles and responsibilities for which they have received different levels of preparatory education. The medical staff will have had extensive experience in systematic educational programs at the university level geared to providing basic knowledge in medicine. Added to this formal schooling will be experience under supervision in the practice of medicine through an internship or residency. At the other end of the scale will be those members of staff in semiskilled roles who may have had only a minimum of formal education or training before joining the institution. Thus an institutional inservice education program will serve a clientele for whom it provides all the learning related to health they have received, for some, to supplying only a minor part of the total training in health, for others.

The potential scope of inservice education may be clarified by comparing it with other sources of education and training of health manpower. In the health professions formal education prior to employment provides a general body of knowledge, skills and attitudes appropriate for the particular profession but these may or may not be related to specific competencies required by a given occupational role. Continuous learning in the profession is achieved, if at all, through self-directed learning activities or participation in educational programs conducted by universities or professional associations. These may be random and unsystematic with little relationship to the particular requirements of the specific role performed by an individual in the health-care institution.

The majority of those employed in health-care institutions will be at the subprofessional or nonprofessional level and may have no education or training directed specifically at health care in the particular occupational role they are required to fill in the institution. Furthermore this group is provided few opportunities to acquire learning systematically and continuously through any organized educational programs outside their own institution. Thus their preparatory education may be superior with respect to general education or vocational skills but lacking with respect to their primary role in the institution.

Inservice education can supply the missing ingredients for role proficiency within a given institutional setting. It has the advantage of providing a structure for educational activities that are immediately relevant to the needs of the organization, the job and the job holder. Thus learning activities can be built around existing or potential problems within the institution so that the application of new learning is immediate and appropriate to the institution providing the education. Furthermore the institution can determine who will or will not participate so that content and instruction can be focused on individuals or groups that will derive the greatest benefit from such education. By controlling the selection of content, the institution can insure the relevance of the material to its needs, thereby eliminating what is not immediately useful in improving the delivery and maintenance of health care.

Many health-service institutions are not sensitive to the advantages of inservice education and do not allot the resources and personnel necessary to insure successful achievement in that area. Well planned and well conducted inservice training programs not only are economical but also insure increased proficiency of performance at every level of staff. It is uneconomic, inefficient and unwise to neglect this crucial area of responsibility within the institution. As Dickinson notes[4]:

> The rapid advancement of knowledge in the health sciences has called into question the ability of practitioners to prevent professional obsolescence through the traditional methods of independent, unguided study. This random pattern of information seeking does not provide the most effective way of learning since it is unorganized, undirected, and may lack a clear purpose. For learning to be effective, there should be guidance and structure provided by a person whose primary concern lies with creating the best possible situation in which health professionals can learn.

## FUNCTIONS

Inservice education programs are of particular value and utility for health-care institutions because they can achieve systematically certain kinds of essential training tasks that are usually done without sufficient care to insure that adequate learning results. The greater the degree of sophistication in the inservice education provided, the more numerous will be the functions it performs in the institution. There are five primary functions of inservice education that are found in every situation. These functions are: orientation, training, development, maintenance and educational support. Programs designed to achieve each function may include a wide variety of learning activities selected for the particular group of learners involved.

### Orientation

Regardless of educational level or previous experience, every new employee must be introduced to the institution and acquainted with his role and responsibilities. The complexity of health-care institutions makes it essential that new employees become acquainted quickly with the goals and standard procedures involved in the operation of the institution. Professional staff members will usually have some familiarity with the goals and procedures of health care in general terms but will need to familiarize themselves with the specifics operating in their new institution. The orientation program may not need to be as long or as detailed for this particular group as may be necessary for others.

Nonprofessional supporting staff members will usually lack the general awareness of goals and procedures characteristic of health-care institutions; consequently they will require a longer and more detailed period of orientation. Campbell[3] suggests that few hospitals have an inservice orientation program for such persons and notes:

> A large hospital in the Southwest reported a loss of over one-fourth of their new employees on lower skilled jobs by mid-day of the first day on the job. The blame was at first placed

> on the fact that most of this group were members of minority groups. Further investigation revealed that new employee orientation procedures consisted of giving an introduction card to the new person as he came to work to carry to his new supervisor. The directions given to the new person as to how to get to a far off department in a confusing maze of buildings were usually curt and inadequate. When he reached his assigned work station, the understaffed personnel were often too busy to work closely with the person and were certainly unable to design a meaningful orientation program.

Orientation programs for new employees should include at least five elements:

(1) An introduction to the institution, its role in society, its goals, standard operating procedures and the major regulations that affect the behavior of the employee.

(2) Familiarization with the general physical layout of the institution and its several departments.

(3) An introduction to the section of the institution in which an individual will be working so that he can relate its operations to the rest of the institution.

(4) An introduction to the specific job as well as the responsibility and authority which it entails, and to the personnel with whom the new employee will be working, so that he can understand how his performance affects others.

(5) An introduction to the lines of authority in the institution and the specific responsibilities of those in the chain of command in relation to his own role and responsibilities.

The more completely and carefully the orientation program is planned and conducted, the more quickly the new employee will become an efficient member of staff. Since every health-care institution differs from all others in some respects, an orientation program is required for everyone. In most institutions it is usually necessary to plan orientation programs on both an individual and group basis. Professional members may join the staff at different times so that it is not desirable to wait until sufficient numbers are present to allow for a group program. Nonprofessional staff can usually be scheduled to arrive in groups and be introduced through a group-orientation program. In either case the personnel assigned responsibility for inservice education will usually be required to conduct the program themselves but will involve such other staff members as may be desirable.

When the orientation program is left solely to the first-line supervisor, it is usually incomplete and inefficient unless the training officers plan and oversee the entire program.

## Training

The training function insures that new employees can fulfil their assigned responsibilities within the institution efficiently and in keeping with regulations. King[8] has identified a number of aspects of the design and conduct of training programs that are essential in order to provide training that is appropriate. The first feature he identifies is a detailed description and analysis of the basic responsibilities of the particular job for which training is to be provided. With this in hand it is then possible to plan training procedures that will simulate the requirements of the job.

The second aspect noted by King is that achievement targets should be established for every training exercise, and performance records should be maintained. The performance of an individual with respect to specific skills must be established gradually by slowly increasing the speed at which repetitive tasks are performed or by gradually increasing responsibility for nonrepetitive tasks. The performance records will provide a measure of learning progress during the learning period that will help to identify any areas of particular difficulty in learning so that these can be emphasized. In addition performance records will provide a basis for subsequent evaluations of on the job performance.

Finally King emphasizes the importance of establishing an appropriate social and psychological climate for learning to encourage and support the learning efforts of those in training. An oppressive learning environment will not only impede learning but also establish negative attitudes toward the job, training itself and the institution that will interfere with subsequent performance. The crucial ingredients in a supportive learning environment are the attitudes of those conducting the training and the efficiency of the design and management of the training program.

Allen[1] indicates that it is essential to prepare and use standard job descriptions for all jobs in health-care institutions. From such descriptions it will be possible to identify the precise behaviors required for which training must be provided and this will lead to generally accepted standards for training that will simplify the training tasks. Standards of this sort will also enable institutions to combine their training programs for certain common tasks, thereby reducing the training cost to any one institution.

Training programs should be provided by those who are specialists in adult education and training. First-line supervisors are not often sufficiently knowledgeable about the intricacies of adult learning to insure an efficient and functional training experience. If it is necessary for training to be conducted by supervisors, then the program should be developed with the aid of an inservice education specialist. In this case the inservice educator will need to provide training for the trainers.

## Development

Since no organization can achieve perfection regardless of the high state of efficiency it does attain, it is necessary to provide inservice education that reaches for an improved utilization and performance of its manpower. Furthermore changes and advancements in knowledge are occurring so rapidly that obsolescence is a continual threat. The development function of inservice education is carried out within an institution to help employees keep abreast of new developments in their field of specialization, to keep refreshed with respect to previously learned competencies and to prepare for advancement to related positions of greater responsibility.

Assisting health manpower to acquire new knowledge and skills related to an occupation is especially important at the professional and paraprofessional levels, where scientific advances are occurring at an increasingly rapid rate and the danger of obsolescence is apparent. Inservice education may assist in the updating process by establishing mechanisms for identifying learning needs and organizing educational programs designed to impart the relevant knowledge to appropriate persons. The amount of new information provided through inservice education compared to other forms of continuing education will vary among the health professions, but in nursing, at any rate, inservice education is the oldest and probably still the most prevalent form of continuing education[10].

For many individuals previously learned skills are lost through lack of use and need to be redeveloped from time to time. In certain health fields specialization may be so intensive that an individual is apt to lose sight of the whole patient so that refresher programs are desirable to insure the perpetuation of seldom-used knowledge or skills. This tends to expand the potential usefulness of a specialist in those areas outside of the particular area of specialization so as to insure reliable performance in emergency situations.

The preparation of health manpower for advancement into positions of greater responsibility within the organization is in many respects an easier task than training new employees, chiefly because the characteristics of the upwardly mobile tend to facilitate learning and change. Allen[1] describes those he classifies as retrainees in contrast to new trainees:

> The retrainee is quite a different individual than the young trainee. Our experience with this group shows them to be an older group, from twenty-seven to thirty-five years, not quite as high in intelligence but far more highly motivated, realistic, insightful, responsible and generally more stable. Their goals are generally fixed, long-range in nature, job-oriented, and they are far more strongly committed to these goals than are the younger students.

In addition health personnel preparing for advancement in the organization tend to have considerable knowledge about its goals, policies and procedures, as well as about informal practices and other personnel so that in many cases the development period may be relatively brief.

The development function of inservice education does not usually include the retraining of health manpower for entirely new careers because this type of occupational change would require that an individual leave the system for some time to acquire the necessary education or training in a different setting. Nevertheless, inservice education could facilitate career change by providing some support during the transitional period. Farmer and Williams[5] suggest that there are several tasks an individual must accomplish during a career change, including redefining values, mapping out an educational program, re-establishing learning skills, adapting to possible changes in family roles and changing the self-image and life-style. Inservice education could play an important part in assisting individuals to complete those tasks successfully.

## Maintenance

The maintenance function includes those inservice education activities designed to insure that changes that have been introduced in the organization are adopted and continued. This may involve considerable effort in following up supervision and in providing additional education where new practices are not being applied on the job satisfactorily.

The ease of performance of the maintenance function depends to a considerable extent upon the nature of the new idea or practice that was introduced. The adoption and continued use of new ideas and practices in a health-care system are influenced by the five major characteristics of innovations identified by Rogers[11]. These include: relative advantage, compatibility, complexity, divisibility and communicability.

New practices and procedures are more readily accepted and used if they are perceived to have some advantage over familiar practices currently in use. Thus the selection of the innovation to be introduced must be in terms of its relative advantage. An inservice education program cannot insure the acceptance and use of practices that are not actually better than current practices; consequently this aspect of an innovation must be analyzed carefully before attempting to introduce it through inservice education. Too often practices are introduced on the whim of an administration without any genuine advantage so that its rejection is inevitable.

If is much more difficult to achieve the acceptance and use of innovations that are not compatible with the behaviors they replace. The substitution of an incompatible innovation for one long used involves extensive un-learning of the old practice before the new can be adopted. In many cases the cost of change far outweighs the advantages anticipated for it. If such a substitution of an incompatible innovation is indispensable, the inservice program must be designed to eliminate the old familiar behavior before attempting to introduce the substitute behavior. This aspect to change is ignored too frequently and accounts, in part, for the imperfect adoption of the desired change in behavior.

New behaviors that are complex in nature cannot be adopted immediately *in toto*. Such complex innovations require the same care in the partitioning of the component tasks into manageable learning units as does the initial learning of any new material. Thus the inservice education program will need to be designed with care to insure the successful achievement of each component in order that the entire innovation can be adopted and used. Some practices may appear simple to those designing training that are in reality complex operations for those attempting to present the whole. This partitioning of learning is particularly necessary if the innovation requires alteration in behaviors that have become autonomic responses.

An innovation with advantages over an old behavior that are readily observable by the learner will be accepted more quickly. It is particularly helpful if the advantages are such that they can be discussed by those attempting to acquire the new behavior. Thus the presentation of a new practice should be designed so that such communication is facilitated.

These several characteristics of innovations will determine the nature and duration of the training program required for their introduction. In general those familiar with a new practice are not aware of the difficulties encountered by some in trying to learn new things so that adequate time for mastering the new practice is rarely built into the training program. Experienced trainers will be more sensitive to learning difficulties associated with new practices than will those whose primary function is not associated with training directly.

## Educational Support

The educational support function is concerned with those activities of health personnel that involve them in performing an educational role with patients or with other staff members in an institution. It is also useful in helping them acquire relevant information from outside the health-care system that will help them fulfil their responsibilities in the system.

In every contact with a patient health personnel are acting as educators of that patient. In the past this aspect of professional performance has been ignored or underrated by those involved. Several of the professions have begun to emphasize the importance of this instructional role in patient contacts but little is done to improve the performance of the professional personnel in this regard. In health-care institutions even the paraprofessional or nonprofessional staff members with patient contact are in the same instructional situation but lack preparation for this responsibility.

An institutional inservice education program can do a great deal to enhance the instructional efficiency of staff members through courses about learning and instruction. This will enhance communication with patients as well as clarify the specific role and responsibility of each staff member in the education of the patient. Such training should reduce the amount of misinformation which the patient receives by insuring that each staff member knows how to communicate his own knowledge accurately and comprehensively.

On-the-job training is done for new employees by every staff member at one time or another. Through inservice education about learning and instruction, each staff person will be able to provide inservice training on a more professional and educationally efficient level. Thus the institutional inservice education program can train all members of staff to be trainers in their own specific areas of responsibility.

Another area of responsibility within the educational support function involves inservice educators as consumers of continuing education. They too must keep abreast of current developments in their field so that new ideas and practices in continuing education can be modified, applied and diffused throughout the health-care organization. Contacts within and between health-care organizations in various regions may be developed to facilitate the exchange of information about inservice educational activities. In that way new developments in inservice programs can be adapted to suit a variety of health-care systems by building upon experiences in other systems.

## ORGANIZATION

Inservice education must be placed in an appropriate position in the health-care organization and be staffed with suitable people in order to carry out effectively its assigned functions and tasks. Campbell[3] notes that inservice education has traditionally been lodged within a personnel department and concludes that such is not a suitable position in the organizational structure:

> Personnel departments are often placed in a line position in the organizational hierarchy and are usually considered to be in a rather lowly position in the pecking order. When education is placed within the hierarchy of the personnel department it is in a very low position within an already stifled organizational domain. As a result, the educational director finds himself with both minimal prestige, low authority and a nominal salary.

One result of such a location for inservice education is that the staff may come to suspect that education is not an important priority of the health-care organization and therefore does not need to be taken seriously.

Campbell[3] further suggests that a separate department of inservice education should be established and that it should be located in a position in the organizational structure independent of the personnel department. This would permit inservice education to operate on an equal basis with all line and staff departments, including personnel. The establishment of a separate department for inservice education would tend to upgrade the status of educational functions and activities within the organization.

In a large organization a department of inservice education should be able to function most effectively if all educational activities are centralized in the one department. Under one department head, separate individuals might be concerned with specific program areas such as continuing medical education, continuing nursing education, the training of volunteers and the education of the nonprofessional staff. The department head would be responsible for guiding and coordinating all of the educational services within the organization and could take the lead in identifying programs that might involve several different categories of staff.

An inservice education department should be staffed by persons who view themselves as educators primarily rather than identifying with a particular health-related occupation. Probably the most important personal characteristics of an inservice educator would be an ability to communicate with the various categories of health manpower for whom educational services are provided and an ability to develop creative responses to learning needs that arise within the organization. An inservice educator needs to have undergone training that has emphasized the principles and practices of adult learning and instruction so that educational programs can be designed, managed and evaluated effectively.

The establishment and staffing of an inservice education department does not automatically insure that its subsequent activities will be accepted wholeheartedly by the health-care organization and its personnel. The initial efforts of such a department should therefore be directed toward gaining acceptance and support within the organization. Consultation and involvement in the planning of inservice education should be sought from higher levels in the organization, from representatives of other departments and from staff members who will be participating in inservice activities.

Although it is preferable to have a separate department responsible only for inservice education, even smaller institutions can and should have a person in charge of the inservice activities as an added duty. In such cases sufficient time must be alloted to perform this additional duty and the individual assigned to it must be given specialized instruction in the procedures used in planning and conducting inservice education. This can be acquired at a larger institution nearby or through programs offered by professional associations or universities. A hospital administrator will be wise to seek a staff member with training and experience in inservice education as well as some other competency in the institution for this position.

## TASKS

In carrying out its functions an inservice education department will encounter several specific tasks that are derived from the various learning needs of the institutional staff it serves. These learning needs may arise from individual staff members or from groups within the institution but the fundamental tasks are the same and similar to those encountered in other kinds of continuing education. The health-service institution has a distinct and definable body of participants with a common goal which is usually lacking in other forms of continuing education; consequently the tasks of the inservice education department are simplified somewhat.

In the health-care institution there is the potentiality of greater control over the educational program; therefore the tasks involved in providing inservice education are more amenable to the use of systematic procedures for developing and integrating specific instructional activities designed to accomplish the functions of inservice education. The tasks discussed below identify the basic elements in the design and conduct of instructional activities. In most cases the activities of the inservice education department will be organized into programs, with each consisting of one or more learning events that are designed to meet specific educational objectives. In essence there is no difference between a single event, such as a meeting or one-day institute on a topic, and a series of related events, such as a course or class. Both require careful planning and management to insure that the purposes are achieved.

## Determining Learning Needs

The first task encountered in designing inservice education is that of determining the specific learning needs of those employed in the health-care institution. The procedures to achieve this are at a relatively primitive stage of development so that it is necessary for those responsible for inservice education to use a variety of sources of information. On the one hand, staff members can be asked to identify any needs for learning that they recognize for themselves and supervisory personnel may know of other needs not listed by employees. Perhaps the most useful procedure is that of performance assessment. This involves an identification of the specific behaviors expected of each staff member in the institution coupled with an appraisal of actual performance by each. Any discrepency between expected and actual performance is an indication of specific learning needs and can identify the crucial instructional objectives for the inservice program.

Less reliable procedures that can be used to identify needs include interviews with staff members through which they can identify their own perceived learning needs. The drawback to this process is that individuals are rarely able to recognize their own primary learning needs. Supervisors can often help to identify needs of those with whom they work regularly through observation of their performance on the job.

Since patients are the ultimate recipients of health services, they too can provide clues to their perceived needs for learning about their own care. This will indicate the extent to which health manpower is fulfilling its educational responsibility to the patient, and those perceived needs can be translated into instructional objectives for staff training.

Personnel records, content tests, medical audits and performance charts are other sources of information useful in identifying specific learning needs. Also not to be overlooked are symptoms of organizational problems such as an excessively high rate of staff turnover or an abnormal frequency of complaints and grievances that might indicate learning needs in the areas of administration or human relations.

Once learning needs have been identified through direct observation and written records, they must be assigned a priority for action. Knox[9] suggests several criteria that may be used in assigning priorities to learning needs. Among these are the size of the discrepancy betwen current and desired performance levels; the proportion of staff for whom such discrepancies are substantial; the relative benefits that the patients will receive if the gap between actual and expected performance is closed; the willingness of staff members to close the gap; and the extent to which this is desirable in relation to the goals of the organization. By assessing the learning needs that have been determined against these criteria, a priority can be assigned to each learning need so that the inservice education department can arrange its educational programs to produce the maximum benefit by dealing with the most crucial needs first.

## Specifying Goals and Objectives

When the priority ranking of learning needs has been determined, those with sufficiently high priority must be translated into inservice education programs. The first step in this process involves the setting of goals. A program goal is a brief statement that summarizes the intended outcome of the program. Such statements are usually phrased in general terms that describe the anticipated achievement of the learning needs that have been identified.

The program goals are analyzed and partitioned into specific instructional objectives that must be accomplished in order to reach the goal. Such objectives identify the specific behaviors represented by the new competencies which the learners can be expected to demonstrate through performance at the conclusion of the program. When these new competencies in performance are attained, it should signal that the program goals have been reached.

Burns[2] as well as Kibler, Barker and Miles[7] suggest that program goals usually involve a number of different behavioral objectives that are rarely identified with sufficient precision to insure that the most appropriate instructional activities are used. Objectives fall into one of three major domains of learning including the cognitive, the affective and the psychomotor types of learning task. Traditionally most program goals are seen as falling solely in the cognitive domain and instruction is planned in such a way that the learning experience is limited to the diffusion of information. Undoubtedly program goals will involve some information learning but in most instances other kinds of objectives in the cognitive domain will actually be more important. Cognitive objectives may also include the development of principles by combining bits of information and establishing relationships among them. Furthermore, the needed learning may also involve specific mental activity, such as the ability to analyze, to generalize and even to predict outcomes. Included in the cognitive domain are those behavioral objectives concerned with problem-solving which cannot be achieved solely by diffusing information to the learner.

In the health services the achievement of affective learning is particularly important. This involves objectives related to attitudes, feelings, appreciations and interests. Since objectives that fall into the affective domain are in the realm of emotions, it is difficult to express them in behavioral terms so that specific instructional objectives can be identified. When affective objectives are involved participants in an inservice program must be helped to know that attitudes and values are involved in the anticipated outcomes of the program along with information or skill.

Psychomotor objectives are perhaps the easiest to identify and express in behavioral terms because they involve motor skills or movements with or without tools and equipment. Such objectives are relatively easy to write and to communicate to the learner since they involve physical behaviors that are readily observable. With psychomotor objectives, however, there is a tendency to be too inclusive in a single objective so that the program goal is often assumed to be the instructional objective. Every skill involves a number of subsidiary and sequential behaviors that must be acquired in order to perform the skill efficiently. Each such subsidiary behavior is actually an instructional objective and satisfactory performance of all such subsidiary objectives in the prescribed order results in the achievement of the goal that describes the skill.

It is well to bear in mind that open objectives may be better than closed objectives with respect to certain kinds of learning. An open objective is one which permits each learner to respond in his own way, while a closed objective requires identical responses from every learner. Closed objectives have traditionally been preferred over open objectives even though lack of freedom in response may inhibit some learners.

A distinction should be made between informational objectives which are used to communicate with others and planning objectives which are used in designing an inservice education program. The latter type of objective includes a performance standard as well as a description of the relevant conditions under which the behavior is to be demonstrated. Informational objectives normally include only the type of behavior and the result of that behavior, and should be used to convey information about the program to participants, supervisors and others. For example, an informational objective might be phrased, "The custodian will describe the appropriate procedure to follow in the event of a fire," while the corresponding planning objective would state, "In an interview conducted at his work station, the custodian will describe orally to the instructor within one minute each of seven steps in the procedure to be following in the event of a fire." The presentation of detailed planning objectives to the learner at the start of a program might produce confusion and uncertainty, but to the program planner they suggest clues useful in determining appropriate instructional techniques and methods of evaluation.

Program goals and behavioral objectives should be circulated to participants prior to the start of a program in order to minimize misunderstanding about the intent of the program and to prepare them for the learning events involved. Objectives that are phrased in terms of observable behaviors that can be applied on the job will assist greatly in establishing the relevance of an inservice education program and will facilitate transfer of the learning to the performance situation.

## Arranging Learning Tasks

When the specific instructional objectives have been selected and ordered, the next task for the program planner involves the identification of the specific learning tasks that must be accomplished in order to achieve the objectives. An objective may require one or more learning tasks which must be arranged in a sequential order that permits the learner to develop his capabilities to perform the behavior specified by the objective. The ordering of the tasks is determined by the nature of the objective and may proceed from the known to the unknown or from the simple to the complex. In any event each objective will have its own inherent developmental logic that will indicate the sequence of the subsidiary learning tasks.

The determination of the sequence of learning tasks is achieved in the reverse order to that which will be followed by the learner. It begins with the terminal behavior specified by the objective and then works down step by step to the point where the learner will begin to acquire the desired behavior. This starting point may vary from one individual to another depending upon his achievement of the prerequisite capabilities. When an entire set of tasks is ordered in relation to each other and to the objective a *learning hierarchy* has been established. Gagne[6] notes that this learning hierarchy specifies enabling conditions within the learner which are necessary for him to acquire the new learning. It is only through this procedure of establishing the learning hierarchy that one can be sure to have included *all* the learning tasks essential for the learner to acquire the terminal behavior specified in the objective.

In establishing the learning hierarchy for a given objective, it is necessary to determine which of the component learning tasks can be handled as a single unit and which should be *partitioned* into subtasks. Simple learning tasks can usually be accomplished better as a single unit, while complicated tasks are learned more easily when they are partitioned. For some learners even simple-appearing tasks may be complex and require partitioning, while for others partitioning will not be necessary. The more experienced learner will usually be more successful with a whole learning task while inexperienced learners will need to have the task partitioned into parts.

The question of partitioning of performance, then, depends on the nature and complexity of the learning task, on the experience and ability of the learner and on the time available for learning.

When considering partitioning material for adults, the attitude of the learner is of utmost importance. With the whole method more time and effort are required before any results of learning are evident, whereas the part method provides a feeling of successful achievement as each part is mastered. With certain adults, particularly the older and the disadvantaged, the quick and continuous feeling of achievement will strengthen motivation, and this may prove to be more important than other considerations in the successful achievement of learning. For health manpower, therefore, the whole method might be preferred for inservice programs for professional and technical personnel whereas the part method would probably be more suitable for nonprofessional supporting staff and voluntary workers.

## Organizing Learners

The learning tasks that have been identified constitute the content of the inservice education activity. Once this has been determined the next task involves the organization of the learners for the purpose of providing them with the instruction needed to help them achieve the objectives and goals that have been selected. There is a variety of different patterns of organization that can be used in an inservice education program and these are the *methods* for delivering the specified content to the target group of learners.

A wide variety of methods is available for use but there are few sound guidelines for the choice of method. Some factors that are considered in selecting the method include the number of people to be involved, the amount and type of content, the comparative cost of alternate methods, and the materials and resources available to the inservice education program.

The methods generally used to organize learners for inservice education include those appropriate for individuals, for small groups and for large groups. Within each of these categories there are numerous alternatives from which to select a specific method to be used for a particular group and content.

Individual methods are those that deal with a single learner at a time. In general individual methods are employed when for one reason or another it is not possible or convenient to assemble a group of learners interested in the same general content. Within the health-care institution there may be those whose work schedule and responsibilities preclude regular participation in a group-learning activity or whose needs for learning are unique among staff members. In such cases an individual method may be the most efficient way to insure that they have an opportunity to learn.

The several health professions have experimented with a number of learning aids and devices to assist individual learners working through the *directed individual-study* method. These devices include audio-tapes, programmed instruction, video-cassettes, and computer-assisted learning. The developmental costs of such devices is high and the learning achieved is questionable. An increasing number of such instructional devices is becoming available to the professions so that the cost is being reduced slowly. Every health-care institution can and should maintain a learning laboratory in which such instructional aids are available for use by individuals.

*Correspondence study* is another individual method that is used occasionally in the health professions but this has not been developed extensively. *Internships* are a more familiar pattern of individual instruction that has been used extensively in some professions but it is not often used for inservice education.

Although individual methods are useful and important, they are generally less successful than group methods. In an individual method the learner-instructor contact is generally minimized so that the individual learner must assume major responsibility for his own learning. There are not many individuals able to sustain the high level of commitment and concentration necessary for successful learning on an individual basis. The ready accessibility of materials and devices in a learning laboratory will strengthen an individual commitment but individual methods are generally less successful than group methods.

Group methods of inservice education offer advantages with respect to cost and learning efficiency. The number of individuals to be involved in any single learning activity will determine which particular group method to use. For small groups the case seminar, ward rounds, supervised practice or discussion group may be used effectively. The selection of one specific method will depend on the nature and extent of the content to be covered.

When the content of the learning activity falls chiefly in the cognitive domain, the method selected should be one that provides opportunities for both the acquisition and application of the information presented. *Case seminars* are particularly useful in this regard and *group discussion* has been used effectively. Psychomotor objectives require methods which encourage the immediate use of the skills learned, and methods such as *supervised practice* or *ward rounds* contribute to this. Affective content can be handled more successfully through group discussion. Small-group methods provide opportunity for the learning performance to be guided and monitored closely so as to reduce error and insure maximum achievement of correct learning. In every case small-group methods permit greater participation by the learner and achieve more substantial results.

Some methods are appropriate for large groups but their efficiency with respect to learning is reduced. *Meetings, symposia* or *conferences* are useful for the dissemination of information but they provide little opportunity for learner participation with a resultant lessening of learning achievement. This disadvantage can be reduced somewhat by a judicious selection of instructional techniques. A variety of materials and devices can be used with large groups but they are useful only as a way of presenting information and are generally of little use for other kinds of objectives.

The method selected for the inservice education activity is often confused with the instructional techniques employed to assist learning. Methods do no more than organize those to be engaged in learning so that they can be helped to acquire the desired learning through the use of instructional techniques.

## Selecting Instructional Processes

The successful achievement of learning depends on how the learner deals with the material to be learned while engaging in the act of learning. This behavior is determined by the instructional technique employed in the learning situation. Different kinds of learning tasks require differing learner behaviors so that an educator must select an instructional technique that is appropriate for the specific learning task or subtask. No single technique will work for all tasks nor will all learners succeed equally well with any single technique. Consequently the selection of the most appropriate instructional technique will be influenced by the nature of the learning task and the previous experiences of the learner in attempting to learn.

Many individuals have been so conditioned by their prior experiences with learning that they are unfamiliar with and suspicious of many instructional techniques. This situation arises when the prior experience in learning situations has been limited to one or two instructional techniques that were used for all learning tasks regardless of their suitability. Such is the case when a technique like the lecture is misused. Consequently it is often necessary at the outset to help the learner learn how to learn by understanding the ways in which a variety of instructional techniques can facilitate his learning.

Different instructional techniques are required for different kinds of learning tasks. Learning tasks can be divided into three major categories, including the acquisition of information, the application of knowledge and the acquisition of a skill[12]. Certain instructional techniques may be suitable for one of these categories but not necessarily suitable for another. Thus the principal concern of the educator is to insure that the most appropriate technique is selected for each kind of task.

Those learning tasks involving the acquisition of information can use such techniques as the lecture, speech, panel, dialogue or debate. These can be augmented by the use of films, slides or reading materials. These techniques involve listening and looking behaviors on the part of the learner so that they are passive techniques. The resultant learning is usually that of memory only and the useful retention of information is relatively short-lived; consequently the actual learning achieved is minimal. Passive techniques like the lecture can be strengthened by adding participative techniques at appropriate intervals during the learning period. Buzz groups are such an adjunct to a lecture that involve the learner in considering the material presented so as to strengthen retention. The optimum length of a lecture is 20 minutes, so by supplementing a lecture with buzz groups effective retention is enhanced. Information techniques are the most economical in time and cost but the least efficient in terms of learning achieved. Thus the use of information techniques is a strategic decision for the planner with respect to the goals of the inservice program.

When the learning task involves the use of information or the application of previously learned material through problem-solving, analysis, generalizations or principles, a different order of techniques is indicated. In this case techniques are selected that involve the learner in doing the kinds of things that will lead to the systematic use of knowledge. It is here that the case-conference or group-discussion techniques are particularly useful for analysis, generalizations or principle learning. Projects involving the use of information to solve real problems are also expedient with this type of learning task.

Skill learning involves the mastering of the component elements in the performance of the skill and the ultimate combination of these separate elements into proficiency of performance. The presentation of the initial behavior is usually accomplished through a process demonstration which is followed by repeated practice that is continued until the desired level of proficiency is achieved.

It is extremely difficult to identify instructional techniques appropriate solely for learning tasks involving affective objectives; consequently those types of learning tasks are usually dealt with by providing opportunities for participation so that the learner can examine and possibly modify his existing values and attitudes. One of the more successful strategies for achieving learning in the affective domain is the creation of a situation in which the desired attitudes exist and are demonstrated by the inservice educator. In such cases the participant may adopt an instructor's attitudes without being requested directly to do so.

As is the case with methods there are few sound guidelines available to assist in the selection of instructional techniques. Verner and Booth[12] suggest that the choice of techniques should be guided primarily by the nature of the adult learning process.

(1) Learning is an active process and adults prefer to participate actively; therefore those techniques which make provisions for active participation will achieve more learning faster than those that do not.

(2) Group learning is more effective than individual learning; therefore those techniques based on group participation are more effective than those which handle individuals as isolated units.

(3) Learning that is applied immediately is retained longer and is more subject to immediate use than that which is not; therefore techniques must be employed that encourage the immediate application of new material in a practical way.

(4) Learning new material is facilitated when it is related to what is already known; therefore the techniques used should help the adult establish this relationship and integration of material.

(5) The existence of periodic plateaus in the rate of learning necessitates frequent changes in the nature of the learning task to insure continuous progress; therefore techniques should be changed frequently in any given session.

(6) Learning is facilitated when the learner is aware of his progress; therefore techniques should be used that provide opportunities for self-appraisal.

In programs where inservice education personnel are providing instruction directly, instructional processes may be selected independently. On the other hand, if other staff members within the institution are used as instructors, then inservice education personnel should provide some consultation and advice to them in order to insure that suitable instructional techniques are selected. When instructors must be drawn from outside of the health-care institution, the inservice educator must provide assistance both with respect to the nature and requirements of the system and the instructional processes that might be used most effectively.

## Evaluation

Evaluation is the processes of determining the extent to which the goals and objectives are achieved by inservice education. This usually occurs on two levels; first, there is the evaluation of the program in terms of its goals and, second, there is the need to assess the degree of achievement of the specific learning identified by the behavioral objectives that is accomplished by each learner.

An evaluation of the degree to which the goals of the program are reached can be accomplished by measuring the gap between expected and actual performance in the job, as indicated earlier in the discussion of learning needs. If this gap is reduced following a learning event and the reduction is maintained over time, then the program has succeeded in achieving its goals in respect to the reduction of the difference between actual and expected performance by staff members. The evaluation of the program is a continuous process closely linked to the identification of learning needs. By maintaining charts recording the relationship between performance and learning need, it will be possible to assess the progress achieved by the inservice education program.

The evaluation of learning achieved with respect to specific instructional objectives is simplified by the precision with which the objective identifies the standard of performance expected to result from the learning activity. In designing and implementing an evaluation scheme, therefore, close attention to the objectives of learning will indicate the kind of assessment procedures and the criteria needed to measure the learning achieved. Thus objectives involving the acquisition of information can be assessed by testing the amount of information retained following the conclusion of the learning activity. Similarly, objectives involving psychomotor skills are assessed by measuring accuracy and proficiency in the performance of the skill. Affective objectives may be evaluated by administering attitude-scales or by observing the learner's behaviors that indicate whether the desired attitudes exist.

Evaluation should be integrated into the program-planning process from the outset and not left until the program is completed, as is done all too frequently. A formative program evaluation may be conducted while a program is still in the developmental stage by trying it out with a small group of health manpower or by getting an appraisal from specialists in the field. The entry performance of the learners should be assessed at the beginning of the program to determine how they stand in relation to the behavioral objectives so that adjustments to the program can be made to suit the needs of the learners. Various kinds of in-progress measurements used while the program is underway will assist both the learners and the instructor to determine progress toward the achievement of the objectives. A terminal assessment is conducted at the conclusion of an activity to determine its effectiveness in enabling the learners to attain the objectives. Some form of followup will assist the inservice educator to judge whether or not the new behaviors have been transferred and adopted on the job.

Final judgments concerning the overall achievement of inservice education programs should be postponed until all phases of the evaluation plan are completed. These judgments should be based upon the three major criteria of appropriateness, practicality and effectiveness. The program should be appropriate to the needs of the particular staff concerned as well as to the goals of the health-care organization. The criterion of practicality suggests that the program should produce benefits to the organization that exceed the costs incurred in its operation. Of greatest concern, of course, is the effectiveness of the program in attaining its goals. If the program enabled most of the participants to improve their performance, then it can be judged to have been effective.

The results of program evaluations are useful to the overall development of inservice education activities in the health-care organization. In addition to providing information about the degree of success of specific programs, evaluation can be used to improve other programs of a similar nature and to justify expenditures on inservice education. Program evaluations may also be used as further inputs into the planning process by assisting in the identification of further learning needs and thereby facilitating a systematic approach to inservice education.

## SUGGESTIONS

The organization of health-care services on a regional basis provides a number of potential advantages for inservice education as well as for other aspects in the delivery of health care. Many of the functions and tasks of inservice education for health manpower may be carried out more effectively and efficiently if health-care organizations cooperate in some aspects of their programs rather than conduct them totally in isolation. Some features of inservice education that appear to be amenable to system linkages through regional approaches are discussed below.

The establishment of standard job descriptions covering health manpower in a number of health-care organizations would facilitate the training function of inservice education. The job descriptions could be parceled out to different inservice departments that could develop and test training programs more thoroughly than could be done if each department developed all of its own training programs independently.

A behavioral-objectives bank could be established that would enable inservice departments developing new programs to draw upon objectives prepared elsewhere. This would facilitate the provision of new inservice programs because the preparation of objectives is probably the most crucial and demanding task in program development.

The development costs or the location and acquisition of instructional materials used in educational programs employing instructional technology might be shared on a regional basis. This would provide some new programs that are not currently available and would reduce the overall cost to a single institution.

Inservice education programs that have been used and evaluated could be circulated within a region. Over a period of time this would produce a library of tested programs that could be compared on the basis of their appropriateness, practicality and effectiveness. The programs could be adapted or modified by the participating organizations, resulting in a considerable saving in developmental costs.

Inservice education departments within a region could conduct cooperative research projects to examine the relative efficiency of various educational methods and techniques. Two departments, for example, might conduct an otherwise identical program with one using an individual method and the other a small-group method. The sharing of information about the results of action-research projects would assist in the development of guidelines for the selection of methods and techniques appropriate for different groups and various learning tasks.

By cooperative arrangement the various health-care organizations within a region might specialize their inservice education programs either in terms of the functions identified earlier or by the occupational classifications of staff members. If functional specialization is agreed upon, one institution might concentrate on providing training programs while another would provide development programs for the health-care organizations in the region. Occupational specialization might result in inservice education being conducted for one occupational class in one organization and for others in other organizations. In either case, specific programs should be conducted initially on a trial basis. In regions where distance is not a factor, staff members could be sent to other institutions with specialized training programs because this would be more economical for a single institution and would produce better education.

Inservice education departments within a region should cooperate in developing a standard program for the training of trainers. Minimum elements in such a program would include adult learning, the design of training programs, instructional techniques, the management of instruction and evaluation.

Inservice educators within a region could organize inservice development programs for themselves so that they could keep abreast of current practices and trends in continuing education. This activity could draw upon resources from within the regional system of inservice education or select consultants and experts from outside agencies involved in adult and continuing education.

The ultimate goal of inservice education, whether within a regional framework or on an organizational basis, is to foster the concept that learning is a continuous process and that it is an activity crucial to the success of the health-care organization. The educational-support function is vital to the development of a continuous learning orientation among health manpower; consequently inservice education is responsible for providing a model of continuous learning for the health-care system. Inservice educators must therefore be consumers of their own product as well as providers of education for others.

## REFERENCES

1. Allen, Richard G. "Application of Adult Education Methods to Hospital Training." *Adult Leadership.* May, 1967. Vol. 16, pp. 20-22, 40.
2. Burns, Richard W. *New Approaches to Behavioral Objectives.* Wm. C. Brown Company, Dubuque, Iowa. 1972.
3. Campbell, Albert B. "The Adult Educator in the Hospital Setting." *Adult Leadership.* Apr., 1971. Vol. 19, pp. 331, 332, 355.
4. Dickinson, Gary. *A Survey of the Need for Programs to Prepare Members of the Health Professions as Specialists in Continuing Education.* Adult Education Research Centre and Division of Continuing Education in the Health Sciences, Vancouver, British Columbia, Canada. 1972.

5. Farmer, James A., Jr. and Williams, Robert G. "An Educational Strategy for Professional Career Change." *Adult Leadership.* Apr., 1971. Vol. 19, pp. 318-320.

6. Gagné, Robert M. *The Conditions of Learning.* Holt, Rinehart and Winston, N.Y. (Second Edition). 1970.

7. Kibler, Robert J., Barker, Larry L. and Miles, David T. *Behavioral Objectives and Instruction.* Allyn and Bacon, Boston, Mass. 1970.

8. King, David. *Training Within the Organization.* Tavistock Publications, London, England. 1964.

9. Knox, Alan B. *In-Service Education in Adult Basic Education.* Florida State University Adult Education Research-Information Processing Center, Tallahassee, Fla. 1971.

10. Nakamoto, June and Verner, Coolie. *Continuing Education in Nursing: A Review of North American Literature 1960–1970.* Adult Education Research Centre and Division of Continuing Education in the Health Sciences, Vancouver, British Columbia, Canada. 1972.

11. Rogers, Everett M. and Shoemaker, F. Floyd. *Communication of Innovations.* The Free Press, N.Y. 1971.

12. Verner, Coolie and Booth, Alan. *Adult Education.* The Center for Applied Research in Education, Washington, D.C. 1964.

# Priorities and Data Bases: Their Relationship to Continuing Education

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Most of this chapter is a description of a process by which an individual health-care provider or a group of health-care providers can make systematic decisions concerning the identification of deficiencies in their care of patients, possible changes to try to remedy the deficiencies and, finally, the degree to which the deficiencies were remedied following a program of attempted change. The process focuses on the need to set priorities, hopefully on a rational basis, and the need to rely on data to make decisions rather than on opinion or untested assumptions. Stripped of all its accoutrements it is simply an adaption of a problem-solving mode of the scientific method. No matter what one wishes to call it, it has been shown to improve decision-making and cooperative performance at many levels and in many situations of health-care delivery. While examples to be cited are drawn from the use of the process by hospitals, there is some evidence and a good deal of commonsense logic which indicate it is and should be applicable almost anywhere in the health-care field whether by individuals or by groups.

The process was originated and developed by Clement R. Brown, Jr., M.D., while he was Director of Medical Education at Chestnut Hill Hospital in Philadelphia, Pennsylvania. My role has been to collaborate with him in the design and carrying out of workshops for physicians, hospital administrators, medical educators, medical record librarians and hospital trustees with the objective of implementing the process in other hospitals[2].

Originally we directed our efforts to ten hospitals located in or relatively near to Philadelphia. For a period of two years I worked closely with these ten hospitals in getting the process implemented. I have worked less closely with 125 other hospitals throughout the United States and Canada involving more than 1,000 people who have attended one of our workshops. From these experiences I have been able to analyze Dr. Brown's process, to add some touches and to study some of the problems of implementing it.

In designing the workshops we wanted the participants to perceive a common iterest so they could work together more effectively. A technique that has appeared to work well has been to ask each participant four questions at the outset of each workshop:

1. What is the ultimate purpose of continuing health professional education?
2. What is (are) the best method(s) for accomplishing your answer to #1?
3. How would you know if or when your answer(s) to #2 accomplished your answer to #1?
4. Given your particular role in the hospital, what are you willing to commit yourself to do to achieve your answers to #1, 2 and 3?

Despite the large number and the wide variety of people answering these questions, almost without exception the workshop participants have replied that the ultimate purpose of continuing education in the health professions is "the improvement of health and patient care" (or some close variant of that phrase). The near unanimity on this purpose – to improve health or patient care – gives a common point of reference. It also contains a logical entailment for answering the other three questions.

In answering question No. 2 (What is (are) the best method(s) for accomplishing your answer to question No. 1?), two years ago specific modes of continuing education were mentioned, but lately an increasingly large group has noted the need to measure the quality of health or patient care as an essential first step. Logic dictates that educational method(s) must be determined by educational needs as they are revealed by measurement of patient care[7].

In answering question No. 3 (How would you know if or when your answer(s) to question No. 2 accomplished your answer to question No. 1?), most of the participants find it necessary to reconsider their answer(s) to question No. 2. Thus an increasing majority have answered that a subsequent measure of patient care must be carried out to see whether any of the methods decided upon in their answer to question No. 2 really do have the desired effect upon patient care.

The participants' answers to question No. 4 (Given your particular role in your hospital, what are you willing to commit yourself to do to achieve your answers to question No. 1, 2 and 3?), cannot be generalized and won't be discussed.

The common reference point (the purpose of continuing education in the health professions is the improvement of patient care) and the logical consequences (i.e., the quality of patient care must be measured first, the methods of improvement depend upon the educational needs, and an assessment of the results of the methods designed to improve patient care requires a subsequent measurement of the quality of patient care) are the core of Dr. Brown's process. They are also the core of this chapter, which undertakes both to explain the process and to submit it as an approach that has much wider application in the field of health care and health-care delivery.

Logically a person or a group or an institution cannot begin with the measurement of health or patient care; some decisions concerning what is most important or urgent – that is, some setting of priorities – should be made at the outset. But this logical initial step often proves to be a psychological barrier. Usually people appear to want to learn how to derive and handle data before they are willing to invest time and effort setting priorities. Therefore in "walking" you through the 13 steps of Dr. Brown's process, which I propose to do, I start with Number Four, confident that any person or group that uses the process will find it necessary (or expedient) to use the first three steps eventually.

Regardless of whether the process is begun at Step One or Step Four, one point must be stressed and kept in mind. All the major components of the system involved should be aware of the process and its implications. In our illustrative case the system involved is the hospital, and the major components are trustees, administrators, physicians, health educators and medical record librarians. Thus our workshops require the presence of a board member, an administrator, three physicians (two of whom were to be "influentials" on the staff and the third the director of medical education or his counterpart), and a medical record librarian. The participation and understanding of persons involved in the process are essential to its effectiveness regardless of the situation or the institution. There are many reasons for widespread participation and understanding, but at heart they are all based upon the fact that the process is a kind of "audit." An audit, no matter what kind, is both an assessment of the past and a commitment for the future. To some degree it is an official examination and verification of the past. Human beings' past performances are being measured by standards that carry the authority of general acceptance as an approved yardstick. The more that the people whose past performance are being audited accept the validity of the standard and its application, the greater authority the audit will carry. An audit, no matter what kind, is also to some degree a proposed norm according to which human beings' future performances are to be measured. That is to say, it is a commitment to try to meet the norm. Again, the more that the people whose future performances are to be measured accept the validity of the norm and its application, the greater authority the norm will carry and the stronger their commitment to meet it will be. The force of the principle that widespread acceptance and understanding of the process are essential to its effectiveness can be appreciated best in specific instances, so let's enter the process at its psychological (rather than logical) beginning. However, before we begin one final clarification is needed. I use the word "patient" quite consciously because it best fits the examples of the process in hospitals. On the other hand I fully recognize the need to think of health, maintenance and prevention, which are not connoted by the word "patient." Paradoxically those using this process end up talking and doing something about prevention and maintenance even though they begin by using the word "patient."

STEP FOUR: *To Set Optimal Criteria*

The group making the audit – the audit committee – is essentially making a comparison between what ought to be and what is. To make this comparison it needs standards of judgment – that is, criteria – and pertinent data. To set optimal criteria the audit committee must ask, "What identifies the group of patients about which we are going to construct criteria?"

For example, let us assume a hospital department of surgery had decided that elective cholecystectomy for chronic cholecystitis is a problem whose frequency and potential for morbidity and mortality is great enough to warrant attention. The surgical audit committee would identify the medical records of the patients who would be the population sample to be studied. No record would be included in which cholecystectomy was not an elective procedure; this would exclude the emergency cholecystectomy for acute, or acute exacerbation of chronic, cholecystitis.

Next the audit committee would ask, "What are those things under optimal conditions we would like to see happen or be avoided in all those patients who undergo elective cholecystectomy for chronic cholecystitis in this hospital?" Generally, criteria which answer this question can be divided into one of three categories: diagnostic, therapeutic and followup.

Once an audit committee identifies an idea or concept that properly satisfies the question concerning ideal conditions, it must write out the criterion in clear, concise and measurable terms. Those who are experienced with the process recommend that each optimal criterion be examined to see if it passes the "RUMBA" test. To do so it must be REAL (related to what should be happening to the patient), UNDERSTANDABLE (by trustees, administrators, medical educators and particularly the medical record librarian, as well as by *all* the physicians involved), MEASURABLE (something that does or does not occur or to which a quantitative value – e.g., 1, 5, or 32-1/2, etc. – can be applied), BEHAVIORAL (*someone* should or should not be *doing* something), and ACHIEVABLE (within a reasonable range of accomplishment given reasonable resources). For some examples of optimal criteria, see Figure 1.

During this step it soon becomes obvious that seemingly simple words such as "and," "or," "either/or," "one of three," etc. assume great importance. For example, suppose the surgical audit committee decides that *any one* of three situations will satisfy them that a particular operation was indicated. In listing those situations they must avoid the phrases "and," "either/or," etc. and simply state that *any one* of the specified situations needs to be documented as having occurred.

Since the process is designed to assist in decision-making, no criteria should be generated that do not have an implication for action. We are not concerned here with patient-care research but with demonstrated better patient care. Therefore, we wish to avoid gathering data only for data's sake. This step tends to eliminate a large number of criteria concerning patient

Elective Cholecystectomy Criteria

| *Optimal* | (Percentage of Optimal) *Minimal* |
|---|---|
| 1. Patients should have record of an abnormal cholecystogram (gallstones or non-functioning gallbladder) | *95* |
| 2. The diagnosis of chronic cholecystitis and/or cholelithiasis should appear as the admission diagnosis or among the admission differential diagnoses | *90* |
| 3. Patients should have a record of an Upper G.I. Series in past 6 months | *95* |
| 4. The history should note the prior presence or absence of jaundice | *85* |
| 5. The P.E. should note the presence or absence of jaundice | *95* |
| 6. The following lab tests should be performed preoperatively: | |
| a. C.B.C. | *95* |
| b. Urinalysis | *95* |
| c. B.U.N. | *95* |
| d. 2 Hr. PPBS or FBS | *95* |
| e. EKG if over 35 yrs. | *95* |
| f. Chest X-ray | *95* |
| g. Serology | *95* |
| h. Bilirubin | *95* |
| i. Alkaline Phosphatase | *95* |
| j. Prothrombin Time | *95* |
| k. S.G.O.T. | *95* |
| 7. Operative cholangiogram should be performed if *any* of following are noted: | |
| a. Jaundice (present or past) | *95* |
| b. Stones palpated in common duct (operative note) | *95* |
| c. Dilated common duct (operative note) | *90* |
| d. Any stones less than 0.5 cm. in diameter (path. report) | *80* |
| 8. If T-Tube is inserted, must have postoperative cholangiogram before its removal | *95* |
| 9. Progress notes must be written daily for first 5 P.O. days | *95* |
| 10. Temperature should not exceed 101° after 4th P.O. day | *95* |
| 11. Postoperative stay should be less than 11 days | *90* |
| 12. Preoperative stay should not exceed 48 hours | *85* |
| 13. Pathologic diagnosis should be chronic cholecystitis (and/or calculi) | *95* |

Figure 1 – Example of Patient-Care Criteria
(From the Greater Delaware Valley RMP "Project Mandate")

symptoms, since they are variable and only lead to a diagnosis but do not confirm it.

The task of the audit committee demands critical judgment and takes some time. Therefore, appropriate people should be on it in appropriate numbers. Ideally the group should consist of between four and eight members. Regardless of numbers, all members should be involved with the problem being studied. I have worked with at least two hospitals that had problems in sustaining the interest of their audit committee members because persons not involved in the care of the particular kind of patient under review were being asked to develop the criteria. One hospital had an orthopedist, an ophthalmologist and a general surgeon as members of its surgical audit committee; it could not understand why the orthopedist and the ophthalmologist had poor attendance records when the committee was deriving criteria for cholecystectomy! Another hospital drew up criteria for prostatectomy with an audit committee composed of only one urologist and four nonurologic surgeons. Six other urologists on the staff viewed the entire process with paranoia. Only when these urologists were asked for their input did the atmosphere calm down. The lesson is simple: Try to arrange each audit committee so that those physicians whose charts are to be reviewed develop their own criteria, using other members of the staff as resource persons. The composition of each audit committee should reflect the problem being studied.

### STEP FIVE: *To Set Minimal Criteria*

Each optimal criterion is derived by informed and experienced judgments of what ought to be in an attainable but ideal world. Thus all optimal criteria can be rated as 100 percent. However, none of us lives in an ideal world. Therefore, the task of the audit committee is to reach consensus concerning a "floor" – the level of percentage of compliance with each optimal criterion below which their group's performance would be judged unacceptable, that is, substandard or deficient. The setting of optimal (ideal) criteria is necessary for creating a scale of values, a measuring stick; the setting of acceptable (minimal) criteria is the application of a scale of values – the use of the measuring stick on actual performance. Thus its use is a test, an assessment, a judgment against which one compares actual performances. For examples of minimal criteria, refer again to Figure 1. Whatever minimal percentage point is chosen is a commitment by a group or an institution (in our case a hospital) to do something about raising substandard performances.

This fact of commitment underlines the importance of two points made previously – arranging that all the major components of the involved system are aware of the process and its implications, and making sure that all persons whose performances are being audited have an opportunity to take part in setting optimal and minimal standards.

One or more of the minimal criteria may have the same rate as the optimal criteria – that is, 100 percent. These would be items so critical that not even a 1-percent error rate is acceptable. To have all, or even many, minimal criteria set at 100 percent would defeat the purpose of the assessment. Since no performance, or only a few performances would be judged to be acceptable, the hospital or department would not know where to begin correction. Such unreasonable requirements would also bring discredit upon the criteria, which must be acceptable to carry authority. Persons who are experienced with the process advise that the minimal percentage should rarely exceed 95, because recording errors, problems in the abstraction of data and the like often lead to deviations that are 5 percent or more. At the other end, experience indicates that a minimal percentage should rarely be less than 60. A minimal percentage less than 60 usually means that the audit committee could not agree upon the importance of the criterion or could not define it in clear, concise, measurable terms. In either case, an audit committee would do well to omit such a criterion. Perhaps later research or data will convince the audit committee that an item is important enough and sufficiently measurable to be included at 60 percent or higher.

### STEP SIX: *To Gain Staff Approval*

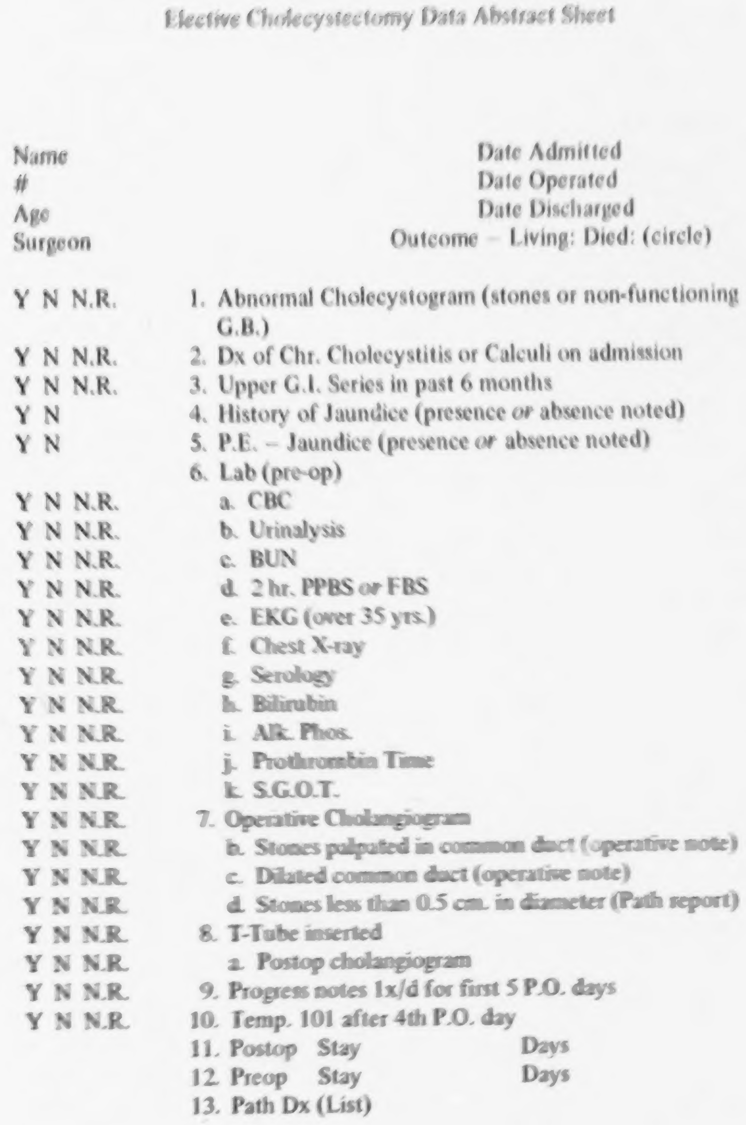
All persons whose records of performance are to be reviewed should have an opportunity to influence the input and thus help determine the consensus concerning the final form of the optimal criteria and the percentages adopted as minimal criteria. Such procedure is a matter of common fairness and, beyond that, it increases the acceptance of the standards that are used to judge past performances and to make commitments for future performances.

In the illustration of the process in a hospital, the person whose performances are being reviewed are physicians. The audit committee should ask for input from all members of a specific department as it begins to set up optimal and minimal standards, and certainly it should circulate its proposed criteria well in advance of the meeting at which the final decisions are to be made.

### STEP SEVEN: *To Abstract Data Sheets*

Once the staff has approved the optimal and minimal criteria, the audit committee must form questions to be answered by the medical record librarian (MRL) who abstracts data from the charts. By charts I mean medical records. In the example cited previously these would be the medical records of all patients who underwent elective cholecystectomy in that hospital during a certain time period.

The construction of the data abstract sheet and the subsequent abstraction of data need not be difficult since usually the questions can be phrased so that they can be answered simply (yes, no or not recorded). Often a specific laboratory result is requested (e.g., 12mg%, Hemophilus influenzae, etc.). See Figure 2 for an example of a data abstract sheet.



Elective Cholecystectomy Data Abstract Sheet

| | |
|---|---|
| Name | Date Admitted |
| # | Date Operated |
| Age | Date Discharged |
| Surgeon | Outcome – Living: Died: (circle) |

| | |
|---|---|
| Y N N.R. | 1. Abnormal Cholecystogram (stones or non-functioning G.B.) |
| Y N N.R. | 2. Dx of Chr. Cholecystitis or Calculi on admission |
| Y N N.R. | 3. Upper G.I. Series in past 6 months |
| Y N | 4. History of Jaundice (presence *or* absence noted) |
| Y N | 5. P.E. – Jaundice (presence *or* absence noted) |
| | 6. Lab (pre-op) |
| Y N N.R. | a. CBC |
| Y N N.R. | b. Urinalysis |
| Y N N.R. | c. BUN |
| Y N N.R. | d. 2 hr. PPBS *or* FBS |
| Y N N.R. | e. EKG (over 35 yrs.) |
| Y N N.R. | f. Chest X-ray |
| Y N N.R. | g. Serology |
| Y N N.R. | h. Bilirubin |
| Y N N.R. | i. Alk. Phos. |
| Y N N.R. | j. Prothrombin Time |
| Y N N.R. | k. S.G.O.T. |
| Y N N.R. | 7. Operative Cholangiogram |
| Y N N.R. | b. Stones palpated in common duct (operative note) |
| Y N N.R. | c. Dilated common duct (operative note) |
| Y N N.R. | d. Stones less than 0.5 cm. in diameter (Path report) |
| Y N N.R. | 8. T-Tube inserted |
| Y N N.R. | a. Postop cholangiogram |
| Y N N.R. | 9. Progress notes 1x/d for first 5 P.O. days |
| Y N N.R. | 10. Temp. 101 after 4th P.O. day |
| | 11. Postop Stay Days |
| | 12. Preop Stay Days |
| | 13. Path Dx (List) |

Figure 2 – A Sample Data Abstract Sheet
(From the Greater Delaware Valley RMP "Project Mandate")

The medical record librarian should never be asked to make medical judgments. If the criteria are stated clearly, concisely and in measurable form, it is likely that the MRL can answer more than 95 percent of the questions without the need for medical decisions. If such are required, then the MRL should be directed to abstract all the data a physician needs to make a medical judgment. In this fashion all the data can be accumulated on a single page for almost any subject under consideration. To make a medical judgment the physician needs only to study the data abstract sheets rather than searching through the charts.

Data abstract sheets should never be devised until criteria have been selected, written and agreed upon. Their purpose is solely to answer whether or not the criteria have been met.

I urge all audit committees to have the medical record librarian present when they are developing criteria (at least present at those final sessions where agreement is being reached). By asking questions concerning what is not clear, the medical record librarian can help in the stating of criteria so that they will be understood by everyone. It will help also if the MRL plays a major role in the development of the form of the abstract sheet. If the MRL understands the form of the data abstract sheet and the physicians are satisfied that performance data on all their criteria will be contained in the data abstract sheet, few problems will arise in the process of abstracting.

One final technical note: If the criteria are stated satisfactorily (in sentence form with no abbreviations), each criterion will have a number possibly followed by a letter. When constructing data abstract sheets it will prove advantageous to use the corresponding number and letter preceding the corresponding item on the abstract. This allows easy cross-reference between criteria and abstracts.

### STEP EIGHT: *To Abstract Medical Records to Define Actual Performance*

As the process proceeds those who derive the criteria (audit committee) usually become quite clear as to what the criteria mean and therefore as to what each item on the data abstract sheet requires in the way of an answer. Unfortunately communications problems arise because the derivers of criteria are not the abstractors. The abstractors, the medical record librarians, need to work with the criteria and the items on the data abstract sheets before they can become reliable abstractors.

I suggest that a random sample of five charts be selected for each disease, operation, condition, etc., to be studied and that the medical records librarian and the members of the audit committee separately and *individually* abstract them. Then a short meeting can be held in which the results of the *independent* abstractions are compared and each person present can ask questions to gain clarity and increase reliability. Once both parties are satisfied that they understand each other, the medical record librarian can abstract the full sample of the charts. If such a pilot-project approach is not followed, it has been the experience of hospitals that the time required for abstracting will increase considerably because neither group can adequately predict all the communications problems that may arise.

The number of the charts to be abstracted depends upon several factors. Too few charts will present the danger of generalizing from too small a sample. Too many charts will overload the medical records librarian. I usually advise hospitals to try to abstract approximately 100 charts in each category to be studied. Often this turns out to be the number of the patients seen over a period of from 6 to 12 months. In small hospitals the number abstracted may be 50 or less even if an entire year's experience is reviewed. If one can abstract more than 50 charts covering a definite period of from 6 to 12 months, this will usually be sufficient to reflect clearly any changes which might occur during the ensuing 6 to 12 months.

When all the charts have been abstracted, one needs only to calculate the results by adding the number of data abstract sheets showing positive compliance with each criterion and dividing by the total number of abstract sheets to get the percentage in the sample for whom the criteria were satisfied.

### STEP NINE: *To Define Performance Deficits and to Design Programs of Change to Correct Deficits*

Simply put, a performance deficit is identified for any criterion in which actual performance does not reach the already-agreed-upon minimally acceptable level of performance. For each performance deficit I urge the audit committee to "brainstorm" possible reasons for the deficit. Then I suggest that it try to put the possible reasons for the deficit in the order of probability and/or ease of correctibility. Finally, the audit committee should consider what might be done to correct each of the possible reasons for the deficits.

At this point the audit committee might seek the help of an educational physchologist. Such an expert can help the audit committee decide the nature of the most probable reasons for each deficit. Is it the result of an attitude? (I.e., is it in the affective domain?) Is it the result of not knowing or of outmoded knowledge? (I.e., is it in the cognitive domain?) Is it the result of lack of skills? (I.e., is it in the psychomotor domain?) The educational psychologist can also help the audit committee identify alternative courses of action to remedy the performance deficit and to decide upon the one that seems the most appropriate[4]. If the audit committee takes this step successfully, it will have gone far toward answering the question of what should be the educational program(s) designed to correct the deficiency.

Note that because the audit committee has been measuring performances by agreed-upon criteria and using data derived from actual records, it is seeking to change performances that do not in fact measure up to acceptable standards and it is thereby proposing changes in action. To implement the proposed changes in action, it should get the approval of the administration of the unit involved, say the head of the department, and the approval also of its members. All members should know what is being proposed and what the reasons for it are. This advice is merely an application of the principle previously stated that all the major components of the system involved should be aware of the process and its implications and should be able to influence the decisions.

### STEP TEN: *To Carry Out Program(s) of Change*

Let us review the process so far. People have been asked to set standards for judging whether their performance is at or above an acceptable level. Then measurements of their actual performance during a specified period of time have provided objective data for discovering certain deficits. The deficits have been studied for understanding of their nature and most probable causes. In the language of medicine, a diagnosis has been made. Prescription of treatment began when corrective actions were decided upon, and educational therapy began when the actions designed to bring about the desired changes in performance were undertaken.

The program of education therapy cannot be specified until the nature of the diagnosed deficit and the judgment of its probable cause(s) are determined[7].

More than 90 percent of continuing education in the health professions appears to presume that the reason for most substandard performance is cognitive (i.e., the causes are deficits in knowledge) and that therefore the therapy should be the transfer of information. The experience I have had for three years with more than 1,000 persons in about 125 hospitals is contrary to this assumption. Attitudinal and organizational problems have far exceeded all other deficits in hospitals as revealed by the standards and the data.

I should like to cite a few examples. Several hospital groups decided to look at their early care of patients discharged (dead or alive) with a diagnosis of acute myocardial infarction. All these groups acknowledged the importance of early monitoring if they were to lower the morbidity and mortality of acute myocardial infarctions. In some instances they discovered that patients were not being monitored as early or as long as they should have been because there was a shortage of monitors available. These groups then had objective data with which they could approach their board of trustees in order to acquire more monitors. Such data does much to differentiate kinds of needs.

So far every hospital group working on acute myocardial infarction has demonstrated glaring deficits in the speed with which their patients are placed on a monitor. Sometimes the deficits are measurable in that the times of arrival in the hospital and the times when monitoring starts are known from the medical records. In such instances they have found that their admission process absolutely precludes patients from being placed on a monitor as soon as attending physicians would have desired. When this has occurred the hospitals have made changes in their admission procedures for any patient with chest pain or when there is a suspicion of the diagnosis of acute myocardial infarction.

In other instances there is no way to discover from the medical records when patients arrive at the hospital and/or when they are placed on monitors. When these data omissions are discovered hospital groups have instituted new procedures such as time clocks in their emergency wards and at their monitors. Such a mechanism now allows easy documentation to decide whether or not the time span between hospital entry and monitoring meets minimal criteria without encountering problems of handwriting or forgetting. Thus the study group can now decide whether their problem is real or imagined.

The two examples cited so far have been organizational in nature. Let me now cite an attitudinal problem. Chestnut Hill Hospital looked at its usage of antibiotics in the medical department. They found a disproportionately low level of actual performance (only 33 percentage of patient records complied with their criteria concerning appropriate use of antibiotics), yet when the staff took a paper and pencil test they performed much better (70 percent). In departmental discussions it turned out that nearly all the physicians knew that viral infections were not benefited by antibiotic usage but their actual performance was greatly influenced by their (usually erroneous) attitudes of what their peers believed. After a few of these discussions their actual performance improved, probably in large part because they had a chance to test the reality of some of their attitudes.

It may seem strange to some readers for me to cite instances of organizational change as "educational," and therefore a short discussion of the term "education" (which each of us may understand somewhat differently) may be in order. I am using a reference point in operational definition of "education."

To define education we must first define learning. Learning may be defined as a change in behavior. Education may then be defined as "planned changes in behavior." Using this definition may offend some, but it has an all-embracing quality that is supported by much educational literature[4].

Suppose that a hospital defines a deficit in patient care that possibly could be eliminated by an organizational change. To be more specific, let us use a real-life example from a pediatric hospital. This hospital decided that at least 80 percent of the patients should have a tuberculin skin test during the year preceding or during the period of admission that was being studied with the results recorded on their charts. It looked at performance and found that this test was documented in less than 20 percent of the cases. Thus it was a deficit in performance. For many reasons the hospital decided that the process of tuberculin testing needed to be institutionalized and the responsibility clearly assigned. Although medical students, interns and residents had had this responsibility, they obviously were not carrying it out. Thus the responsibility was assigned to the admitting nurse, who was instructed to record the results of any tuberculin test of the past year or, in its absence, to administer a tuberculin test unless a physician ordered otherwise and to record the results (or have the nurse on duty 48 hours later do so). Subsequent analysis of records indicated a 95 percent level of compliance. Thus the deficiency was remedied.

The example cited was chosen because of its organizational nature. Ordinarily we would not think of the change as educational. Using an operational definition of education does characterize the change as educational because it was a planned change in behavior. In fact, if we go back to the ultimate purpose of continuing education in the health professions, we can see that any change in behavior, including the patient's own behavior, which leads to improved patient care, can properly be considered within the realm of education.

### STEP ELEVEN: *To Remeasure Performance after Appropriate Periods of Programs of Change*

To summarize where we are: In the previous step, a series of assumptions was acted upon – assumptions concerning the nature of the revealed deficit, the most likely cause(s) and the most promising course(s) of remedial action – that is, educational therapy was undertaken. But were these assumptions correct? Step 11 is to check the data. It is simply a repeat of Step 9, which revealed the deficiency. If after an appropriate period remeasuring the performance now reveals some acceptable levels of performance where performance had previously been unacceptably low, then the audit committee can move on to more focused efforts on those criteria still not being met satisfactorily. It should be clear that this process, while constantly testing assumptions by generating data, does not qualify as clinical research. No researcher would invoke a cause-and-effect relationship between programs of change (Step 10) and improved performance (Step 11), considering the lack of controls and the relatively small numbers. Pragmatically, however, we said we were interested in improving patient care We have tried measures designed to improve patient care. If the desired change occurs we can, at least temporarily assume it was largely the result of the program(s) of change. If the desired result was not obtained, a review of the assumptions about the nature of the cause and the educational therapy is in order. We need to reexamine only those assumptions that were not followed by satisfactory performances.

A suggestion might be in order here. One problem faced by groups as they begin these processes has been that of selectivity. How does one decide how detailed should the criteria be? I have urged them to think of each problem in terms of its outcome and its process. Whenever possible they should create criteria for the outcome. Looking at the outcome can be compared with the use of the low-powered lens of a microscope. If the outcome results are acceptable, move on to another outcome. If, however, the outcome results are not acceptable (i.e., you have demonstrated a performance deficit) turn on the high-power lens by creating criteria for the processes which lead to a good outcome. Subsequent data concerning performance in these criteria would probably explain why the outcome results were not satisfactory and also probably suggest therapeutic changes to improve the outcome.

Let me cite an example. Suppose you are looking at a particular surgical procedure. Rather than creating numerous criteria concerning preoperative, operative and postoperative care, perhaps you can create a few criteria about outcome. One such criterion could concern acceptable mortality rates. Unfortunately few hospitals do enough of any particular operative procedure to make mortality figures (which are usually quite low) very reliable or valid in terms of being generalizable. Therefore, one would likely turn to measures of other outcomes (e.g., complications) as better reflections of the quality of patient care than mortality figures.

From the standpoint of the usual medical record, however, complications are rarely listed on the front sheet where they can be tabulated. This means that the audit committee needs to think up indications of complications such as prolonged postoperative stays, temperature elevations beyond an expected postoperative day, the use of blood transfusions or antibiotics, etc.

If all of their outcome measures are met satisfactorily they probably do not need to go into any greater detail concerning the use of operative drains, type of suture, preoperative or postoperative fluids, etc. Conversely, if their outcome measures are not satisfactory, a compilation of the types of complications being met will give clues as to the processes which need more detailed scrutiny.

### STEP TWELVE: *To Monitor Periodically*

Let us suppose data show that a series of criteria concerning elective cholecystectomy are now being met satisfactorily (that is, actual performance meets or exceeds each minimal criterion). The audit committee should move on to another priority area in patient care, possibly changing its own composition appropriately, but leaving one member as a monitor to make an ongoing review of the hospital's performance in cholecystectomy.

One method of ongoing review would be to abstract all charts in this category every year. As a hospital begins to add new patient-care areas to its study lists, this method will take too much of the medical record librarian's time. Therefore another method would be for the medical record librarian to abstract only a random sample of the hospital's annual charts of patients who underwent elective cholecystectomy.

The person on the audit committee given the responsibility for the ongoing review might be designated as the inhouse "expert" on that condition. As such he would ask the hospital librarian to call to his attention all the new literature bearing on cholecystectomy. This "expert," or monitor, could call a meeting of the audit committee from time to time to discuss whether the criteria should be changed in the light of new information or to discuss documented examples of "slippage" in the group's performance. In either case, the recommendations of the audit committee should be subject to the approval of the department members whose performances are to be reviewed (as was stressed in Step 6).

### STEP THIRTEEN: *To Get External Validation of Criteria and Cross-Auditing*

As people become comfortable going through the previous steps they may develop enough confidence to seek expert opinion about their criteria. Such a step is called external validation of their criteria.

This step has important implications. We often hear members of medical school departments belittle the ability of community hospitals to derive meaningful criteria. In working closely with ten hospitals in the Philadelphia area and many others throughout the United States and Canada, I have been singularly impressed with the high levels of excellence each of these hospitals has demanded of itself. In fact, those members of medical school faculties who have been criteria developed and adopted by community hospitals have consistently commented that they would gladly adopt these criteria for their own departments.

I urge that a hospital that wants external validation propose a cross audit to a medical school department. Both groups would first agree on a set of criteria and then audit each other's performance. In the one instance of cross audit of which I am aware, the community hospital's patient care surpassed that of the medical school department.

We have now "walked" through the process from Step Four to the end. Let us complete it by going through the first three steps, which we skipped for psychological reasons.

### STEP ONE: *To Set Priorities*

Health care is such a vast and complex field that we need some data to help us decide where to put our initial efforts. Williamson, Alexander and Miller have designed a three-step process for helping us set our priorities. This approach makes so much sense that the reader is urged to consult their publication on the subject[11].

In brief outline their first phase is to determine *Patient Needs*. One way to do so would be to rank health problems of a given population according to the extent of expected (or actual) patient impairment.

By agreeing upon a series of disability weights each patient discharged from a hospital can be rated according to these weights. The final rating can be related to the patient's primary diagnosis. Secondary diagnosis would receive a lesser magnitude and tertiary diagnoses an even smaller magnitude of these disability ratings. If a patient had an acute myocardial infarction, that would be his primary diagnosis. If he also had diabetes mellitus, that might be his secondary diagnosis, and if he had essential hypertension, that might be his tertiary diagnosis.

Let us assume that the least disability was zero and the most was 20. Let us also assume that secondary diagnoses will receive 0.5 weights and tertiary diagnoses 0.25 weights. Suppose a patient received a disability weight of 10. This "10" would be applied to the primary diagnosis, "5" to the secondary diagnosis and "2.5" to the tertiary diagnosis.

Now we can collect such data (preferably on a computer) for *every* patient discharged from a given hospital during a time period (say six months). At the end of this time we should have a priority listing of diagnoses causing the greatest amount of disability in this particular hospital. Thus we would have measures of *Expected Impairment*.

Phase two would entail determination of the amount of preventable impairment. Suppose a diagnosis high on the previous list was one for which little or nothing could be done. This step would move the diagnosis further down the list, thereby allowing those below it to rise on the list. In essence we have identified the extent to which the expected impairment might be prevented by current medical resources (*Preventable Impairment*).

Phase three consists of determining the extent to which the preventable impairments were *not* prevented by the care actually provided. As a result you will have discovered *Preventable Impairment Not Prevented*. Phase three is accomplished by carrying out Steps Four through Thirteen of the "Bicycle Process" already described[2].

The use of these three Phases can produce striking results. In Chestnut Hill Hospital, Dr. Clement R. Brown, Jr., developed a method by which the medical staff deliberated upon and agreed to criteria for weighting each patient for disability. Subsequently, during a six month period when each medical record was abstracted for PAS-MAP (discussed later), optional columns were used to store these disability weights for each patient. At the end of six months the data were compiled according to the principles of Step One above.

Dr. Brown asked each member of the medical staff of Chestnut Hill Hospital to list what he thought were the ten leading causes of disability in their hospital (as defined when they approved the disability weights). Seven of the ten diagnoses associated with the most disability as generated from the six-months PAS-MAP output appeared fairly commonly on the lists of the 110 physicians. However, two other diagnoses appeared on only three physicians' lists and one of these leading causes of disability appeared on only one physician's list. Thus this confrontation with reality forced the staff to look at problems which would have otherwise escaped positions of high priority on their lists.

In the example cited above we were again dealing with a hospital and its priorities concerning hospitalized patients. If the logic of the Williamson, Alexander and Miller model is appealing, there is no reason why it cannot be used as well to arrive at priorities for ambulatory patients, preventive care, community health planning or broad public health planning. The only changes would be in how one decided *Expected Impairment* (Phase One) and *Preventable Impairment* (Phase Two).

STEP TWO: *To Use Problem-Oriented Records*

The Problem-Oriented Record, as designed by Lawrence L. Weed, M.D.[10], makes the abstraction of data so much easier and useful than the outworn methods of the past (which, unfortunately, are still the prevalent methods of the present) that one may predict it will be the dominant mode of recording patient data within the next 15 years.

The Problem-Oriented Record requires that the physician and all others caring for a person draw up a list of the patient's problems. Some problems may be definitive diagnoses while others may be as vague as "abdominal pain." In any case each problem is given a number and listed on the front sheet of the patient's chart. The date that the problem is first known to be "active" is listed to the right of the problem. When the problem is "solved" or "resolved" that date is entered in another column to the right of the active column. Thus anyone can pick up the chart at anytime and quickly see what the patient's problems are and which problems are active.

The number which each problem is assigned is important in at least three respects. First, for each order on the chart there should be at least one number in the margin next to the order. This number should refer to that specific problem for which the order is being written. Second, when progress notes are being written there should be a number in the margin referring to the problem about which you are writing the progress note. Finally, a number should be written next to any original or revised plan, again referring to that problem for which the plan is being written.

There is a great deal more about the Problem-Oriented Record that is available to the interested reader but simply putting the above parts of it into action has significant impact upon the auditing of charts. It now becomes a much easier task to identify a person's reasoning for actions undertaken. This is often missing in the standard chart.

I predict that anyone using the "Bicycle Process" outlined above (Steps Four through Thirteen) will be more likely to adopt the Problem-Oriented Record for daily inpatient *and* outpatient usage than will those not using the process. This may be another illustration that the identification of deficits in performance sparks in the performer a "need to know" and thereby moves him to change his performance. After reviewing numerous charts that lack the specificity and clarity to answer whether or not their criteria are being met, physicians are much more likely to use the Problem-Oriented Record even though it calls for changing long established habit patterns than are physicians who are simply being proselytized to use it.

Depending on the complexity of the patient's problem, the clarity of the handwriting, the thickness of the chart, and the like, the abstracting process takes an average of from five to ten minutes per patient chart once the abstractor has a few months of experience. PAS-MAP then computerizes the hospital's data and returns the data in various forms. The major mode of display is to arrange most of the approximately 40 administrative and 40 medical bits of data in vertical columns for each patient. Patients are arranged horizontally according to their diagnosis. Most of the 1,300 hospitals employing PAS-MAP (and thus contributing their charts to the data base) apparently make considerable use of the administrative and utilization data they get back. However, most of them seem to make little or no systematic use of the medical data. One reason for their failure to use the medical data systematically appears to be "information overload."

To explain, each hospital subscribing to PAS-MAP "buys" the items in their abstract form and thus "buys" the columns of data produced by the abstracting process. Few of the hospitals have asked themselves how they plan to use the medical data: "What decisions are we going to make based on the data provided?" As a result, most hospitals merely glance but rarely look closely at the medical data. This omission is not lost on the medical record librarian, who does not develop, or loses, the incentive to derive, store, contribute and have available medical data for the hospital's use.

Several columns in the PAS-MAP case abstract form are allotted for optional use by each hospital but I have not observed many hospitals making ongoing systematic use of these columns in programs of improving patient care. As a rough estimate, I would judge that 20 to 80 percent of the data necessary to answer a department's list of criteria are available on the computerized data sheets provided by PAS-MAP. The nature of the criteria will determine the percentage of the data available in PAS-MAP. Obviously the more data available in the PAS-MAP abstracts, the less time will be required for searching through the hospital's own medical records for additional data. Thus on the whole PAS-MAP can be of considerable aid in carrying out Steps Four through Thirteen expeditiously.

Two major problems arise in the use of PAS-MAP data. First, some hospitals have looked at PAS-MAP output sheets and then restricted their criteria to those that could be documented solely by PAS-MAP data. The hospitals that have taken this route have usually decided that the criteria developed in such fashion are trivial. The inference is that while computers can ease the burden of documentation, there is no way to get meaningful criteria except by the hard way of thinking and discussion.

A second problem is that the PAS-MAP system is too rigid, in my opinion. While it does provide a few optional columns, I think it should be more flexible and I suggest how it might become so. Suppose it were to cut down by one half the number of medical bits of data to be gathered on each patient, from 40 to 20. The first 20 medical bits would resemble the present system in that they would refer to the same categories regardless of the diagnosis. The last 20 medical bits of data, however, would be entered and understood only according to the primary diagnosis or operation. The total amount of medical data remains unchanged but one half the items would become specifically related to the patient's diagnosis. Thus, for example, if we were concerned with patients undergoing elective cholecystectomy, the first 20 medical bits would be the same regardless of the diagnosis or operation. The abstractor would enter and the computer program would interpret the last 20 bits as referring to specific categories applicable only to cholecystectomy. These categories would be different for appendectomy or diabetes or pneumonia, etc. Almost all of the data required to answer almost any criterion concerning that diagnosis or operation now would be available directly from the PAS-MAP record without searching through any hospital medical record.

STEP THREE: *To Computerize Data Sources*

Any system computerized or not that permits the accumulation and retrieval of relevant patient-care data without repeated abstraction of charts would be of benefit to the process outlined above, especially Step Eight. Several systems are nationally available that permit the computerized collection and retrieval of hospital data. Unfortunately most of them concentrate on administrative data. The only national system supplying signficiant quantities of medical data of which I am aware is the already mentioned PAS-MAP – the Professional Activities Study-Medical Audit Program provided by the Commission on Professional and Hospital Activities, Ann Arbor, Michigan.

The PAS-MAP System requires that charts of all patients who are discharged or who die be abstracted each month by participating hospitals. The abstraction process is determined by the PAS-MAP case abstract form.

## SUMMARY:

The usefulness of data to a person or a group is usually proportional to the amount of thought put into a situation *prior* to the production of data. We will likely *use* data only if we have "a need to know" these data. Often reams of data are accumulated only to gather dust on a shelf; conversely, the lack of critical data may not be noticed until somebody asks the right question. Data are sterile unless they are used. The "need to know" generates and uses data and pertinent data generate and feed the "need to know."

The process described in this chapter allows a person or a group to discover what deficiencies exist in patient care in a hospital (or other institution or agency) that ideally should not exist, deficiencies both of omissions and of commission. Thus it identifies problems and gives clues to their definition. Once a problem has been correctly defined, usually a solution can be found. At least the search can be begun. In any case, the process allows constant feedback to tell whether the attempted solution(s) was (were) successful.

As presently utilized the process tries to capitalize upon generally agreed-upon principles governing the way adults learn best. Before I mention a few I would ask the reader to stop and write down the conditions under which he has found he learns best. When you have finished, compare your list with those that follow[6].

These points are neither systematic nor comprehensive. They are listed merely in order to add concreteness to the suggestion that there are a number of useful generalizations about which students of learning are in substantial agreement.

> A motivated learner acquires what he learns more readily than one who is not motivated. The relevant motives include both general and specific ones – for example, desire to learn, need for achievement (general), desire for a reward, or to avoid a threatened punishment (specific).
>
> Motivation that is too intense (especially pain, fear, or anxiety) may be accompanied by distracting emotional states, so excessive motivation may be less effective than moderate motivation for learning some kinds of tasks, especially those involving difficult discriminations.
>
> Learning under intrinsic motivation is preferable to learning under extrinsic motivation.
>
> Tolerance for failure is best taught through providing a backlog of success that compensates for experienced failure.
>
> Individuals need practice in setting realistic goals for themselves, goals neither so low as to elicit little effort nor so high as to foreordain failure. Realistic goal-setting leads to more satisfactory improvement than unrealistic goal-setting.
>
> The personal history of the individual – for example, his reaction to authority – may hamper or enhance his ability to learn from a given teacher.
>
> Active participation by a learner is preferable to passive reception when learning, for example, from a lecture or a motion picture.
>
> Meaningful materials and meaningful tasks are learned more readily than nonsense materials and more readily than tasks not understood by the learner.
>
> There is no substitute for repetitive practice in the overlearning of skills (for instance, the performance of a concert pianist), or in the memorization of unrelated facts that have to be automatized.
>
> Information about the nature of a good performance, knowledge of one's own mistakes, and knowledge of successful results, aid learning.
>
> Transfer to new tasks will be better if, in learning, the learner can discover relationships for himself, and if he has experience during learning of applying the principles within a variety of tasks.
>
> Spaced or distributed recalls are advantageous in fixing material that is to be long retained.

In addition, adults are problem solvers. If we could simply assure the aforementioned principles while having adults solve problems relevant to their everyday practice, we would witness a revolution in continuing education.

* * *

The process I have described is retrospective in that it examines and evaluates past performances but it is also prospective in that it identifies deficiencies in patient care, suggests probable causes and indicates promising courses of action to improve patient care. It is potentially prospective also in that it can lead to a series of decisions which can be embodied in an on-line audit system. For example, suppose a group has studied their management of acute myocardial infarction. This group may then decide to incorporate a series of behaviors to be recorded *as they occur* in the coronary care unit rather than retrospectively. They also might work out a system which guides those behaviors so that they remain within predetermined limits by establishing routine, prescribed procedures (that is, by way of algorithms).

The process is not patient-care research and will not prove cause and effect relationships, but it will tell you where you are, help you decide where you want to go, and give you some clues as to how you might get there. Stripped of all its accoutrements, the process is simply one of solving problems by use of the scientific method.

However, science cannot tell us where we *should* go, or *should want* to go. Those are questions of goals and purposes, ultimately of values. Values are matters of worth and ideals that give touchstones for making this decision rather than that, for choosing this course or this thing rather than another.

The process requires decisions based on values in that it requires the setting of priorities and standards. Without priorities and standards to give us a "fix" and a direction – benchmarks concerning where we are and guidelines to where we want to go – we would be like the beginning medical student trying to get a glimpse of the optic disc of an infant whose eyes are in almost perpetual motion. Without the student's knowing what position he should assume to be able to see the fundus when the infant's eye comes to a position of rest even for only a second, it is almost impossible, short of sedating the infant, to get a good look at this fundus. Likewise unless one has fixed standards against which to measure performance, the process loses meaning.

The priorities and standards should be set locally through a method of "participatory democracy," not because of political ideology but out of consideration for motivating factors for learning. This point needs enlargement. We are concerned with the use of data bases for the purposes of continuing education. For educational reasons along, therefore, it makes a great deal of sense that people are more likely to carry out a decision in formulating which they played a role than in a decision foisted upon them. In my experience, almost every failure in carrying out the process that I have described has been due to abrogation of the idea of participatory democracy.

It also makes sense when you think of communication problems over the relatively long period of time for the complete cycle of the process. If people play a role in the development of an idea and have a part in its decision and implementation, many times related communication problems will be averted.

None of us should be so naive as to ignore the political implications of the process I have described. We are all aware of the pressures to centralize the process of standard-setting so that the quality of health care can be more easily evaluated. While most would agree that health-care providers need to be more accountable, there is great disagreement about the method(s) to achieve this. It is my presumption that the further from the field of action (i.e., the health-care provider-consumer interaction) that the standards are set, the less likely it is that the standards will be followed. If true, it is another compelling reason to demonstrate to ourselves and others that we can set good standards on a local basis. Moreover, while externally imposed standards *may* monitor the quality of health care, only participation in the standard-setting and application is *educative.*

In the illustration I have used, a hospital was the locus of the process. In such a setting it is essential for the trustees, administration, and the medical staff to agree that the process merits a trial. Just as the trustees have required financial reports for years from the administrator, so now will they likely come to require reports from the administrator and the medical staff concerning quality of patient care. The forces for such an accounting are growing exponentially. Let me list some of these forces.

First, is a series of court rulings (the most prominent being the Darling case) which place the ultimate legal responsibility for the quality of patient care in a hospital squarely on the shoulders of the board of trustees[8]. Second, there is a growing body of governmental (mainly Federal) legislation requiring evaluation of health services (Medicare, Medicaid, Health Maintenance Organizations – HMOs –, Professional Standard Review Organizations – PSROs – etc.). Third, there is the growing voice of the consumer. In part this is reflected in the aforementioned legislation but this is manifested also at a local level in the community. More and more people are dissatisfied with health care and want to see some accounting of it. Fourth, there is the problem of rising costs of malpractice insurance. (I have been told that one commercial carrier in the Pacific Northwest will grant a discount rate for malpractice insurance to any hospital staff that carries out the process I have described.) Fifth, there is growing pressure from accrediting bodies to incorporate a program of medical audit in any hospital which desires continued accreditation. Two examples are "Quality Assurances Programs for Medical Care in the Hospital" to be published by the American Hospital Association in 1973 and "Trustee, Administrator, Physician Institutes" published by the Joint Commission on Accreditation of Hospitals. Sixth, the growing number of state medical societies contemplating or already requiring medical audits for approval of hospitals as loci of approved continuing medical education activities (California, Washington, Pennsylvania and New Jersey, etc.). Finally, there is an increasing feeling of "dis-ease" of health professionals in their present systems of continuing education and hospital committee work. Most of those that get involved in the "Bicycle Process" find it is helpful in solving many of these problems. During the past two years the number of such "satisfied customers" has exceeded even my most optimistic expectations and they are proving to be effective salesmen.

While the trustees do not know, and cannot know, enough to set the patient-care standards, the ultimate legal responsibility for the quality of patient care rendered in their hospital rests squarely on their shoulders. If the medical staff is not reaching its self-defined minimal levels of competency, the trustees must ask the members of the staff and themselves, "What can we do to help us practice the quality of patient care you say we ought to?"

The administrator, for his part, has to make sure that the resources are available to carry out the process. Usually this requires some additional salary for a medical record librarian to abstract data when an audit committee needs these data. Much of what MRLs do now may be a waste of time, so that diverting them to abstract data (as this process requires) may not be very costly. Regardless, if abstracting data plays a role in improving patient care, it will be worth the costs.

A variation of the process I have described for hospitals has been developed to be carried out in physicians' offices[5]. As devised by Daniel Hamaty, M.D., each participating physician agrees to a review of his office practice in relationship to a set of agreed-upon criteria. As I understand this program, a physician volunteers to become a participant. He then has his outpatient records reviewed in the subject area in which he agrees to be reviewed. These data are reviewed by an expert in the particular area. The name of the physician whose records are being reviewed is confidential and not known to the expert reviewer. The expert then indicates some reading material and other things thought to be helpful in improving the physician's practice if significant deficits in his patient care are demonstrated. I believe that the physician also has the option of meeting with his reviewer to discuss the program of change recommended by the reviewer.

Bjorn and Cross[1] employ a similar system and make extensive use of the Problem-Oriented Record in deciding which outpatient records will be reviewed. They have had more experience than anyone else in keeping problem-oriented ambulatory patient records. Periodically they decide to review their management of specific problems. Since each one of their records is coded for specific patient problems, they can quickly accumulate large numbers of records of that patient problem to be reviewed. After their performance data have been collected they then invite an expert in that problem area to visit and review with them things they might do to improve their performance. Among its many other advantages, the use of a problem-oriented coding system allows one to review performance relative to the initial problem rather than to a defined diagnosis or present I.C.D.S. coding system used on hospital charts. This is helpful because it reflects real life situations more completely and realistically.

Until recently the whole area of patient-care data has seemed to remain dormant. Perhaps this was due in part to the newness of the field of patient-care data. Whatever the reasons, we still must deal with a continuing problem – namely product versus process.

In patient care, product is an outcome and process is one or more of the steps purportedly carried out to improve that outcome[12]. Unfortunately measures of product such as morbidity and mortality are at present fairly crude. Attempts to dissect these crude measures into meaningful parts have been few but look promising[9]. For example, when one begins to define disability in all its aspects one can begin to measure changes in these disability measures over time. As we become more explicit in the outcome we would like to see occur, we can better relate the processes needed to achieve these outcomes.

Fessel and Van Brunt carried out a study which purports to show no relationship between process and product[3]. They reviewed 50 charts of patients who underwent appendectomy in each of three hospitals. They examined each chart for 19 process items. A process item was defined as present or absent depending on whether or not its presence or absence was recorded on the chart. Samples of process items included anorexia, rebound tenderness, and temperature elevation, etc. Their one product measure for each of the three hospitals was the percentage of appendices noted to represent pathologically proved acute appendicitis. Since there were no statistically significant differences noted among the three hospitals in product (i.e., the percentages of abnormal appendices were similar) and yet there were significant differences in 8 of the 19 process measures among the three hospitals, the authors concluded that there was no relationship between process and product.

From a statistical standpoint Fessel and Van Brunt have committed a serious error. They have completely ignored the 11 process items in which *no* significant differences were noted among the three hospitals. A more likely conclusion from their data is that there is no relationship between eight processes and one product but that there may be a relationship between 11 other processes and that same product. Lumping (in contra-distinction to splitting) can lead to false conclusions.

From a commonsense standpoint they have committed a more grievious error. If one were to list those points in the history, and in the physical and laboratory tests that one would like to see recorded in order to decide whether or not an appendectomy was indicated, they would almost certainly coincide with the very 11 process items Fessel and Van Brunt disregarded.

Finally their study is an interesting paradox. On the one hand their conclusions (this also includes the second part of their study – i.e., myocardial infarction) are not warranted. On the other hand they have described outcome measures (in their acute myocardial infarction study) which are much more helpful than the usual morbidity and mortality measures.

Until the process versus product controversy is settled, I recommend three dicta:

1. Wherever one can examine the product, do so. If the product (outcome) is satisfactory, one need not look closely at the process(es). If the product is not satisfactory, careful examination of the process is indicated.
2. If product (outcome, end-result) measures are difficult to derive, try to measure only those processes that have on-the-face validity (i.e., that commonsense says might likely have an effect on outcome).
3. Always look for better (more clearly defined) measures of outcome.

Very few of us know where we are or where we want to go when it comes to patient care. With the "Bicycle Process" that I have described step by step, we no longer have any legitimate excuse for not at least trying to find out where we are and where we want to go! Using it or a variation of it, we can determine needs, not wants. Many things we need we do not want and are unaware that we need them, and many things we want we do not need and are unaware that we do not need them. Measuring our performance against our own criteria helps differentiate our wants from our needs, the latter being demonstrated performance deficits. The ability to determine what we actually need to improve patient care has many deep and sharp implications for the development and training and continuing education of health manpower. Many physicians and educators have long suspected that pertinent reliable data in these areas would be needed. Here is our opportunity to have some influence on the generation and use of these data. If we do not seize that opportunity, we shall be part of the problem, not part of the solution.

1. Bjorn, J.C. and Cross, H.D. *Problem-Oriented Practice.* Modern Hospital Press, 230 West Monroe, Chicago, Ill. 60606. 1970.
2. Brown, C.R., Jr., and Fleisher, D.S. "The Bicycle Concept – Relating Continuing Education Directly to Patient Care." *New England Journal of Medicine.* May 20, 1971. pp. [illegible]97.
3. Fessel, W.J. and Van Brunt, E.E. "Assessing Quality of Care From The Medical Record." *New England Journal of Medicine.* Jan. 20, 1972. pp. 134-138.
4. Fleisher, D.S. "Medical Education – A Clinical Pathologic Conference." *Medical Clinics of North America.* May, 1970. pp. 591-602.
5. Hamaty, D. "West Virginia State Medical Association's Voluntary Peer Review Service." *West Virginia Medical Journal.* Sept., 1970. pp. 307-309, 323-329.
6. Hilgard, E.R. *Theories of Learning, 2nd Edition.* Appleton-Century-Crofts, Inc., N.Y. 1956. pp. 486-487.
7. Miller, G.E. "Continuing Education For What?" *Journal of Medical Education.* April, 1967. pp. 320-326.

8. Springer, E.W. "Medical Staff Law and the Hospital." *New England Journal of Medicine.* Oct. 21, 1971. pp. 952-959.

9. Starfield, B. and Scheff, D. "Effectiveness of Pediatric Care: The Relationship Between Processes and Outcome." *Pediatrics.* April, 1972. pp. 547-552.

10. Weed, L.W. *Medical Records, Medical Education and Patient Care* Yearbook Publishers, Inc., 35 East Wacker Dr., Chicago, Ill. 60601. 1970.

11. Williamson, J.W., Alexander, M. and Miller, G.E. "Priorities in Patient-Care Research and Continuing Medical Education." *Journal of the American Medical Association.* April 22, 1968. pp. 93-98.

12. Williamson, J.W. "Evaluating Quality of Patient Care – A Strategy Relating Outcome and Process Assessment." *Journal of the American Medical Association.* Oct. 25, 1971. pp. 564-569.